

Election Day blues

David Moschella: IT is hard to pander to - muffling its voice in Washington. 35



Dousing Disney

Embedded database helps protect Magic Kingdom. 57



COMPUTERWORLD

The World's Technology Newspaper

www.computerworld.com

November 2, 1998 • Vol. 32 • No. 44 • \$4/Copy

U.S. challenges temp status

TIME WARNER CASE COULD REDEFINE 'CONTRACTOR'

By Barb Cole-Gomolski

IN A CASE that should hit close to home for many IT departments, the U.S. Department of Labor has accused Time Warner Inc. of denying pensions and

health benefits to full-time workers by wrongfully classifying them as temporary workers or independent contractors.

The case marks the first time the agency has taken on this issue, which could impact all

companies that hire contract workers, observers said.

"Employers must deliver promised benefits to all eligible employees, and we believe some misclassified Time Inc. employees did not receive benefits they were entitled to," Labor Secretary Alexis Herman said when announcing the suit.

Time Warner shot back with a statement that said the Labor Department's claim had no basis in law or in fact.

"The IT industry should pay
Temp status, page 104

Unix regroups against NT on the high end

By Jaikumar Vijayan

IF YOU'RE GETTING ready to write the obituary for Unix, think again.

Windows NT has been working up a head of steam in the workstation and workgroup server markets. But Web commerce, mainframe replacement and high-availability requirements continue to fuel user demand for Unix systems. And
Unix regroups, page 105

WHEN IT COUNTS

Which server operating system would you choose to run a mission-critical application?



Windows NT
Unix
Don't know

Base: 105 IT managers at companies with 200 or more employees and with Windows NT Server and any version of Unix in use

Source: Computerworld Information Management Group, Framingham, Mass.

Oracle moves strongly into warehousing

By Stewart Deck

ORACLE CORP. confirmed that tomorrow it will announce several recently acquired data warehousing tools and capabilities that, when combined, will form a new, integrated warehousing strategy, from the back end through management features.

Analysts said this is a strong step for the company. "This sounds like an integrated, end-

Oracle, page 16

ERP user interfaces drive workers nuts

By Craig Stedman

IT USED TO TAKE workers at Hydro Agri's Canadian fertilizer stores about 20 seconds to process a farmer's order. But installing SAP R/3 last January changed things — and not for the better.

The average order-processing time ballooned to 90 seconds because the workers had to navigate through six R/3 screens to enter all the required data.

It's a problem faced by many companies: Enterprise resource

planning applications such as SAP AG's market-leading software promise many corporate benefits, but they have unwieldy user interfaces that can frustrate employees, sap their productivity and hurt customer service.

"We take 45,000 orders during a six-week period, and clicking from screen to screen was a killer," said Andy Hafer, director of information management at Tampa, Fla.-based Hydro Agri North America Inc.

ERP, page 24

Big retail SAP project put on ice

By Craig Stedman

NASH FINCH CO., one of the first users to buy a version of SAP R/3 for retailers, last month shelved most of its \$76 million project after development delays made it impossible to install the software in time for the year 2000.

Instead, the Minneapolis-based food wholesaler and supermarket operator, which has already spent about \$50 million

SAP project, page 104

Programmers who are blind find that Windows developments are closing doors on career opportunities. Janina Sajka (at right) notes that the graphic nature of Windows tool kits is forcing programmers like her out of mainstream development work.
IT Careers, page 86



Your largest client needs help fast.

Who are your three best Java

programmers not on assignment?

***Do you
know?***



You can spend millions of dollars on application software and still not have the information you need to run your business. That's because most application software automates just the back office—or just the front office. Oracle® Applications integrate your entire business—sales, service, supply chain, manufacturing, accounting, projects, human resources. Everything. Our applications capture all the information needed to provide a complete view of what's going on in your business. Every decision you make is based on up-to-date information and impact on shareholder value. We call it business intelligence. And it's from Oracle. Now you know.

If you'd like to know even more—and who wouldn't—call Oracle.

1-800-633-0921, ext. 17681, or visit www.oracle.com/info/17 today.

ORACLE®
Applications



Browser-war book authors Michelle Slatalla and Joshua Quitner tell just how tough Microsoft is. **In Depth, page 84**

Kraft's Jim Kinney uses community-building and personal development to chop IT turnover to 5%. **Managing, page 69**

Despite limits, intranet-based training promises greater access to training at lower costs. **Review Center, page 77**

EXECUTIVE Briefing

News summary for senior managers

■ Programmers who are blind can work pretty well using text-based interfaces and screen translating devices. But many can't use standard drag-and-drop tools, leaving them unable to compete with sighted coders. Many worry they'll be out of jobs before long because alternative technology is too expensive. **Page 86**

■ The Labor Department has accused Time Warner of cheating by treating temp workers like staff members but denying them benefits. Time Warner harshly denies it, but this accusation, first of its kind, could affect all companies that hire contractors. Temp employment is high, as IT groups deal with year 2000 and other projects. Many contractors like their status, but their employers must differentiate between temps and permanent staff. **Page 1**

■ Nash Finch and other companies are finding that enterprise resource planning (ERP) applications are more trouble than they're worth. Others find that ERP slows them down in areas such as order-taking. Many users are reconsidering the whole approach, even as ERP vendors accelerate their efforts. **Pages 1, 4, 57**

■ Ford car parts maker Visteon is trying to sell to other manufacturers but has to overhaul its IT infrastructure to do so. It wants to cut product development time by two-thirds and cut manufacturing time by 80%. It's moving away from homegrown software to an ERP system, but it also needs manufacturing, analysis, engineering and other systems. **Page 6**

■ Intranet-based training shows a lot of promise because it cuts down on travel and can include live interaction with the teacher.

But it's harder to ask questions, it's depersonalized, and even proponents think classroom teaching is better. **Page 77**

■ Employee-referral programs are popular, but as the IT labor market gets tighter, companies rely even more on them. Price-waterhouseCoopers gets one hire out of three from referrals; US West rewarded its best employee referrer with a trip to Hawaii. Even retailers are having to overhaul traditionally skimpy referral and retention plans to keep staff. Toys R Us, which had relied heavily on contractors, recently reversed course, reducing its temp head count. **Page 39**

■ Consulting is a good career alternative for some IT professionals, but before striking out on their own, they need to put together a solid business plan and accept that contracts, not long-term job relationships, define how they deal with clients. Consulting is risky, uncertain and, like any small business, doesn't let the proprietor punch out at five o'clock. **Page 89**

■ TV-based devices show promise as a way for consumers to reach the Internet. But despite analyst reports that TV will explode as an access device, site designers are holding tight, not adding TV-specific tweaks until they see proof that couch-surfing is taking off. **Page 43**

In this issue

NEWS

- 4 **IT managers investigate** self-healing apps that can reduce support requests.
- 6 **Parts maker bursts** from niche market with IT overhaul to help it compete.
- 8 **Microsoft claims** Netscape set it up in market-domination scheme.

- 14 **Nordstrom moves** online, but can it maintain its rep for great service?

OPINION

- 33 **Smart techs suck up** to top business brass, aligning IT and business in the process, Michael Schrage writes.

- 35 **Politicians try** to get support from high-tech types, but neither party has been able to coherently address tech concerns, David Moschella charges.

QUICKSTUDY

- 28 **IMAP:** E-mail that lets you check out messages before you download them.

TECHNICAL SECTIONS

CORPORATE STRATEGIES

- 39 **Employers increase** reward programs for workers who refer friends for jobs.
- 39 **Retailers overhaul** compensation and benefits packages to hang on to techs.
- 39 **Toys R Us swears off** contractors, calling them an expensive addiction; it adds full-time staff instead.

INTERNET COMMERCE

- 43 **TV promises** to be a hot Web platform, but site designers aren't worried yet.

THE ENTERPRISE NETWORK

- 51 **Internetworking heavies enter** virtual network market, widening user choices.

- 51 **3Com launches** Web-based service database to help customers troubleshoot.

SOFTWARE

- 57 **Steelmaker aims** to be service leader, planning just-in-time manufacturing.
- 57 **Embedded database offers** power of a database without all the work.

SERVERS & PCs

- 63 **Publishers stick** with the Mac, though they use NT for specific functions.
- 63 **Intel lays out** road map to the successors to the Xeon and Merced chips.

FEATURES

MANAGING

- 69 **Community-building cements** relationships with staffers, reducing turnover.
- 74 **Project cheerleaders keep** projects on track, so supporting them is critical.

REVIEW CENTER

- 77 **Intranet training** promises wider availability, but systems to do it have limits.

IN DEPTH

- 84 **Microsoft overstepped** its bounds with competition, according to the authors of a book on the browser war.

IT CAREERS

- 86 **Programmers who are blind worry** about their future as graphic tools take over from the text-based ones they're able to use.

ETC.

Company index	103
Editorial/Letters	32
How to contact CW	103
Inside Lines	106
Stock Ticker	102

ENTERPRISE RESOURCE PLANNING

Retailer closes ERP project, returns to mainframe, after costly failure. **1**

ERP slows orders at farm company; other ERP users also see productivity take a hit. **1**

Retailers edge toward ERP apps but can't let go of existing best-of-breed software. **4**

ERP vendors discount heavily to attract customers in vertical markets. **57**

QUICK STUDY

this week

MAP

E-mail standard gains steam thanks to remote-access abilities

COMPUTERWORLD
www.computerworld.com/move

Retailers seek more ERP functionality

By David Orenstein

ALTHOUGH ENTERPRISE resource planning (ERP) vendors are moving aggressively into the wide-open market of the retail industry, users and analysts said ERP will have to provide greater industry-specific functionality if it is to displace today's popular approach of integrating best-of-breed software.

"That market is much less penetrated than virtually any other economic sector," said Donald Bellomy, an analyst at Aberdeen Group Inc. in Boston. Retailers were late to leave mainframes behind and had until recently showed little desire to look at ERP, he said. That's why major ERP vendors have been buying or partnering with vendors that have retail specialties to increase their appeal to retailers.

One of the first U.S. adoptions of SAP Retail went live Oct. 4 at Reebok International Ltd. in Stoughton, Mass., said

Chief Technology Officer Peter W. Burrows. Reebok chose to use an ERP system as its supply-chain backbone not only because the applications will integrate smoothly, but also because the system will last for years.



Liz Claiborne's John R. Thompson says his company has found best-of-breed solutions offer greater flexibility and meet more specific needs than ERP systems do.

Trying to mix and match best-of-breed applications could expose Reebok to trouble if vendors fail or are acquired, Burrows said. Also, as a global company, Reebok didn't want to run the risk of having to choose a set of best-of-breed applications in every country in which it has an outlet.

But like many retailers,

Reebok isn't implementing ERP across all its enterprise functions yet. Other vendors provide the warehouse management and in-store systems.

Still, when possible, Reebok will stick with SAP, Burrows

Retail Inc., a 700-store subsidiary of American Greetings Inc.

Carlton began using JDA Software Group Inc.'s ERP software in 1991. JDA's presence grew after a 1996 upgrade of Carlton's merchandise management package and addition of a data warehouse system. Carlton now is evaluating JDA's in-store system.

But other retailers are choosing best-of-breed applications, saying ERP systems aren't ready. For example, Toronto-based Roots Canada Ltd. is replacing a set of JDA retail applications in favor of a set of best-of-breed applications integrated by Richter Systems Inc., said Darlene Goren, director of corporate operations and technology at the clothing and furnishings company.

ERP vendors couldn't handle the company's needs and would have confined its operations, she said. For example, Roots' franchisees needed a purchase-

order module at their sales terminals, and users at headquarters wanted to easily import and export data to their desktops. The ERP system couldn't do that, Goren said.

"You have less flexibility in ERP," agreed John R. Thompson, CIO at New York-based Liz Claiborne Inc. The fashion company has found greater functionality in using different products than it has seen in ERP systems. For Liz Claiborne, where employees have much autonomy, best-of-breed programs let employees work with the best tool for their specific needs and talents. The sweeping changes imposed by ERP systems work better in more autocratic companies, he said.

Thompson did acknowledge that ERP vendors are reducing their rigidity and increasing their functionality. "Many ERP companies have come to grips with that. The story isn't over," he said. □

& Retailers get creative to lure IT talent. Page 39
ERP vendors turn to pricing as a competitive weapon. Page 57

Self-healing systems may cut help desk calls

By Cynthia Bournellis

INFORMATION TECHNOLOGY executives looking to significantly reduce help desk calls are eyeing a new product based on self-healing technology announced today by Tioga Systems Inc., a start-up in Palo Alto, Calif.

Self-healing products automatically restore desktop applications to their original state by reinstalling application components damaged, removed or modified by other programs.

More than 60% of help desk calls are from users who are unable to access their applications, according to Hurwitz Group Inc., a research firm in Framingham, Mass. Many users delete required program files or install programs that damage other programs by overwriting shared components with incompatible versions.

A Hurwitz study for Tioga estimated that self-healing software such as Tioga's can reduce total cost of ownership for PCs by \$3,800 over an unspecified period.

Tioga's Self-Healing System doesn't require a help desk administrator to fix applications because it works automatically with the end user's Windows

registry, much as disk, antivirus and uninstall utilities do.

The software takes a snapshot of the components of a Windows program and stores them on a server. It then probes the program at set intervals and re-installs any damaged or missing components, according to options set by the administrator. The end user may not even realize the reinstallation happened.

A few products, such as Microsoft Corp.'s Office 98 for Macintosh, will reinstall needed support files when they launch. Some help desk programs, such as Radia from Novadigm Inc. in Mahwah, N.J., and PictureTaker from LANovation in Minneapolis, reinstall only an entire application, causing user downtime. Although Tioga's approach is new, Ronni Coleville, an analyst at Gartner Group Inc. in Stamford, Conn., expects other vendors to follow suit.

World Savings & Loan in Oakland, Calif., had a system outage in its accounting department when the department rolled out a new version of a custom application that included a new database driver. That driver prevented the older version from working simultaneously with the new version. It

took the company three days to get it running again. Outages such as this can result in up to 400 calls to the help desk, take hours to repair and impair user productivity, said Brian Dana, senior IS vice president at the bank.

Although the concept of Tioga's software appeals to Dana, he said World Savings couldn't use the current version because it doesn't work with

server operating systems or large enterprise network management software. He said his IT staff spends most of its time resolving issues at the server. Tioga officials said the next version would interact with server operating systems.

Stanford University in Palo Alto, Calif., uses Tioga's software. CIO Raman Khanna said he hopes the result will be that the IT staff of more than 350

can focus on more important networking tasks and not spend time — at a cost of \$80 per hour — visiting end users' PCs.

While many businesses use technology that restricts users from downloading unapproved applications, Stanford doesn't. "It's a free for all here," Khanna said.

In addition to having Stanford's standard shrinkwrapped and homegrown applications, the university's 30,000 users often add their own software as well as various utilities plucked off the Internet. □

Baan to lay off 20%, names Coleman president

By Craig Stedman

BAAN CO. is swallowing something few ERP vendors have had to choke down: a strong dose of layoffs.

Two weeks after warning that it would report a third-quarter loss, the struggling Dutch company dropped the other shoe last Thursday. Baan announced a stunning 20% workforce cut along with the \$31.7 million loss and the latest in a series of top-management changes.

Baan said the layoffs will winnow out sales, marketing and administrative jobs that mushroomed as the maker of enterprise resource planning (ERP)

software went on an acquisition binge over the past two years.

To Keith Bearden, CIO at A-dec Inc. in Newberg, Ore., those kind of cuts don't sound all bad. Bearden said several Baan salespeople have been hounding him to buy different products.

But Baan's financial health will bear close scrutiny as A-dec prepares for an early-1999 applications upgrade that will cost close to \$1 million. "To see them lose money when SAP is still doing well is not real comforting," he said.

Baan named Mary Coleman, who had been running its Aurum Software sales force au-

tomation unit, as its new president. She takes over that job from Tom Tinsley, who remains chairman and CEO.

Coleman could be "exactly the prescription this patient needed," said Joshua Greenbaum, an independent software analyst in Berkeley, Calif.

But Baan still has to integrate all its different products, Greenbaum said.

For now it's having trouble selling the acquired software within its ERP installed base, he added. The company also is working on a marketing makeover that shifts its focus to midsize users and indirect sales channels. □



FASTER DATA WAREHOUSING

Got mountains of data in a dozen different formats that you need to select, reformat, aggregate, and sort? SyncSort™ is optimized to do the job—fast. Use it with more specialized warehousing tools to slash your processing time. To arrange a **free trial**, call us at (201) 930-8200. Or if you'd prefer more information first, we'll send you a copy of "Six Data Warehouse Tasks Made Easier with SyncSort.™"

syncsort

Tel (201) 930-8200 dept. B8CWS
Fax (201) 930-8290 dept. B8CWS
<http://www.syncsort.com/B8cws>

IT revamp fuels auto parts maker's expansion

► Effort seeks to integrate core processes

By Bob Wallace

ONCE JUST AN auto parts supplier to Ford Motor Co., Visteon Automotive Systems is immersed in a massive IT overhaul designed to integrate its core processes and drive its new business challenge of expanding into the open market.

The \$17 billion Dearborn, Mich.-based Visteon is banking on the estimated \$100 million makeover to streamline its business and power its recent entry into the fiercely competitive auto parts market.

Although the information technology makeover is far from complete, Visteon has already secured new business from 13 automakers.

Visteon already is a large global company with about 82,000 employees in 21 countries; 81 plants, including 32 joint ventures; and 36 sales offices, engineering and technical centers.

The key goals of the IT overhaul are to cut product development times from an average of

30 months to 10 months, reduce manufacturing time for parts from an average of five days to one day and have 20% of its business come from non-Ford sources by 2002.

"The challenge here is awesome," said Dave Monroe, a senior analyst at Plant-Wide Research Group in North Billerica, Mass. "Re-engineering this

"Re-engineering this business organization is equal to designing and engineering John Glenn's space shuttle."

**— Dave Monroe,
Plant-Wide Research**

business organization is equal to designing and engineering John Glenn's space shuttle. Visteon has to develop people's skills, product procedures and documentation on top of setting

up communications links with customers and suppliers on a global basis."

Visteon is fairly unique in its approach to IT, one industry expert said.

"Visteon is being forced by a new business condition to quickly separate from home-grown legacy systems, while other companies like Lucent and Procter & Gamble that are doing similar things have the luxury of more time," said John Bermudez, group vice president of enterprise research at AMR Research Inc. in Boston.

Although many large companies are implementing enterprise resource planning systems, a small number, including Visteon, have realized that isn't enough and that supplemental packages are needed, he added.

With a summer 1999 target date, Visteon is implementing SAP AG's R/3 and Netscape Communications Corp. products to support Internet-based electronic data interchange (EDI), a production data management system and a plant scheduling and planning pack-

Visteon's IT overhaul

Application provider	Benefit
SAP AG	Streamline transactions, achieve application integration
Netscape Communications Corp.	Suppliers and customers save using EDI over the Internet
Structural Dynamics Research Corp.	Ease data access by using single repository for production data
I2 Technologies Inc.	Simplify plant planning and scheduling
Aspect Development Inc.	Accelerate product development cycle

age. Also due is a new procurement system.

The company has already assembled project teams to perform design, prototype and testing work on the new applications. The teams comprise Visteon IT workers as well as on-site technical experts from each vendor in the project.

BIG LOAD

And they will have many irons in the fire. Among them is R/3-Visteon, which will use SAP's R/3 central business process modules to form a backbone for business transactions, said Dave Bent, Visteon's director of enterprise processes and systems.

It will supplant most of the company's current transactions in purchasing, accounting, financial analysis, distribution, sales order management and distribution.

"We had been using a set of legacy systems on mainframes and client/server [platforms]," Bent said. Because those applications weren't integrated, "We tended to be functionally driven rather than process-driven," he said.

The company will use com-

mercially available interfaces wherever possible to integrate its other new manufacturing-related applications with R/3, though some custom work will be needed.

Three vendors participating in the Visteon makeover already offer interfaces to R/3, Bent said.

Also on tap is product data management. Visteon is working with Structural Dynamics Research Corp. to install and tie in a system that manages product development data.

With the new package, computer-aided design, engineering and test results data resides in a central repository rather than many dispersed databases. "This much more integrated approach will enhance the productivity of our engineers," Bent said.

The auto parts and systems firm has teamed with Netscape to provide the products and knowledge to create central EDI hubs, or a clearinghouse that uses the Internet. And because it's based on the Net, users will find that it substantially less expensive than using EDI services from value-added networks. □

Cigna's new CIO looks beyond 2000

► Will refocus IT to build competitive advantage

By Robert L. Scheier

ANDREA ANANIA was named CIO at Cigna Corp. just last week, but she's already received a great welcome present: applications and systems that are largely year 2000-compliant. That should let her refocus spending on applications that can crush the competition.

"The year 2000 has consumed a fair amount of investment" during the past two years, Anania said. "The bulk of the remediation work will be done by the end of the year."

As a result, she plans to shift most of Cigna's information technology budget to applications that deliver competitive advantage for the \$20 billion insurer, health care and financial services provider.

Anania joined Cigna in 1995 as information systems officer for Cigna Retirement and Investment Services. And a year later, she was named senior vice president, responsible for

CIGNA CORP.

Headquarters:
Philadelphia

Business: Insurance,
health care and financial
services

1997 revenue: \$20B

1997 net income: \$1.1B

the unit's business and IT functions.

As Cigna refocuses on application development, one challenge will be finding and standardizing on tools to help Cigna build object-oriented applications that can link customers, suppliers and various operating units of Cigna over the Web, Anania explained.

"Over time, we're developing more and more common customers" across Cigna's various operating units, she said. In ad-

dition, Cigna must be ready to merge its systems with those of other companies it acquires or merges with.

To pave the way for interoperability among applications and systems, Cigna is about two-thirds through the process of standardizing its users on Windows 95 and NT clients, NT servers and IP and router-based networks, Anania said.

OUTLOOK

She declined to say, however, whether she plans any changes in the size or structure of Cigna's IT group, whether she plans to outsource any work or the current or future size of Cigna's IT budget.

She did say that Cigna's year 2000 work, which was finished earlier than its competitors, has given the IT staff valuable project management and software testing experience that will come in handy as it moves further into development of new applications.

Anania replaced the retiring J. Raymond Caron, who was CIO since 1988. □

Exchanges suffer systems snags

SYSTEM GLITCHES struck at two major stock markets last week, causing data-reporting errors for some mutual funds.

A failed switch halted all stock trading Oct. 26 on the New York Stock Exchange. The switch problem affected less than a quarter of the 3,760 stocks traded on the Big Board, but exchange officials stopped all trading so that technicians could replace the switch and clear out queued-up trades.

The National Association of Securities Dealers hopes to have

a fix in place this week for a software glitch responsible for distributing bad data to Lipper Analytical Services, which provides mutual fund prices to *The Wall Street Journal*.

The software problem began two weeks ago, when the Nasdaq Stock Market Inc. installed a new mutual-fund quotation system.

The snag has affected the changes in the net asset value of several hundred mutual funds transmitted.

— Thomas Hoffman

Customer Relationship Management



Whether your customers are delighted, or simply delighted to leave, revolves around knowing your customer data.

That's why you need the SAS[®] Solution

Who are your most profitable customers...and *why*? How many customers are you losing...and *why*? What value do your customers see in your products and services...or those of your *competitors*? Instead of just storing your customer data, explore all the possibilities with the SAS Solution for Customer Relationship Management.

It's the only software that integrates the full scope of managing customer relationships. Collect information at all customer contact points...then analyze data to better understand customer needs. Refine business strategies around your most profitable customers. Determine lifetime customer value. All by just pointing and clicking.

To find out more, and request a free *Guide to Customer Relationship Management with the SAS[®] Solution*, visit us at www.sas.com/crm

Profile customers

Assess marketing ROI, analyze churn, and more

Award-winning data warehousing capabilities

Fully Web enabled

Year 2000 compliant



SAS Institute Inc.

The Business of Better Decision Making

www.sas.com/crm E-mail: cw@sas.com Phone 919.677.8200

In Canada phone 1.800.363.8397 SAS is a registered trademark of SAS Institute Inc. Copyright © 1998 by SAS Institute Inc.

Microsoft points finger at Netscape

► *At trial, claims tactics are industry norm*

By Kim S. Nash
and Patrick Thibodeau
WASHINGTON

MICROSOFT CORP. was set up by Netscape Communications Corp., which itself tried to illegally divide the online market in cahoots with America Online Inc., according to the version of events Microsoft presented in court here last week.

But Microsoft's latest argument didn't hold much weight with some legal observers. Microsoft appeared ready to try any number of defenses — some more plausible than others — simply to raise doubts about U.S. Department of Justice antitrust charges, they said.

Microsoft wants to show that in its competition with Netscape, it was acting just like other companies in the industry, said Robert Lande, a professor of antitrust law at the University of Baltimore in Maryland.

Licensing deals, agreements to promote each other's products and other close partnerships are routine in the soft-

ware business. But the critical difference is that other companies don't control monopolies, Lande said. "That's what this trial is all about," he said.

Meanwhile, the Justice Department began to shift the focus from Microsoft's dealings with Netscape to its meetings with Apple Computer Inc. and AOL. It's part of the government's argument that Microsoft conducted a pattern of illegal behavior — using its monopoly in operating systems to wrest control in other markets. Microsoft vigorously denies both that charge and the assertion that it has a monopoly.

David Boies, lead lawyer for the Justice Department, submitted evidence that, he said, shows Microsoft twisted Apple's arm to use Microsoft's Internet Explorer browser instead of Netscape's Navigator.

The day after Apple interim CEO Steve Jobs announced that Microsoft was taking a \$150 million stake in his company, in August 1997, Netscape CEO Jim Barksdale got a telephone

call from Fred Anderson, Apple's chief financial officer. In handwritten notes, Anderson had scripted what he wanted to

say to Barksdale. "Apple needed to ensure that Microsoft would continue to provide MS Office for Mac or we're dead," Ander-

HOW AOL TURNED

U.S. prosecutor David Boies wove together E-mail to suggest Microsoft illegally muscled America Online to drop Netscape

"Move Netscape out of Win32/Win95, avoid battling them in the next year."



— From a memo by Paul Maritz, then head of consumer systems at Microsoft, to Bill Gates on June 1, 1995

"From a pure technology standpoint, it does look like Microsoft may win this one. Couple that with their distribution (OS) muscle, then Netscape clearly has an uphill battle. So we do need a very strong deal with Netscape (Web programming, board seat, etc.) to go with them; at this point, we have that, but if it gets watered down, it may be Microsoft time — as difficult as that prospect may seem."

— Steve Case, in an internal AOL memo Jan. 24, 1996

"We are happy (indeed eager) to join the battle with Netscape and I think we'd be a terrific ally for you (and vice versa)."



— America Online Chairman Steve Case to Jim Barksdale, CEO of Netscape, in a draft of a message written in October 1995. It's unknown whether the memo was sent

"I talked to him this afternoon. He said they are on a path to close with Netscape before the end of the month. I told him I wanted to convince him to pay a visit and really talk about our goals."



— Bill Gates, in an internal Microsoft memo Jan. 8, 1996, regarding Steve Case

son wrote. "They were threatening to abandon Mac." The "trading card" was to make Explorer the default browser, Anderson wrote.

This week, Avie Tevanian, vice president of programming at Apple, is expected to take the stand. Although Judge Thomas Penfield Jackson has put the trial on a quick schedule, proceedings are moving slower than expected, said Robert Litan, a senior fellow at The Brookings Institution, a Washington think tank.

With the trial now in its third week, just two witnesses out of 24 have been called and disposed of. Only a small portion of the 1,200 pieces of evidence has been formally submitted. "By the time of a final ruling, life [in the software industry] will have moved on substantially," Litan said.

All of the legal posturing irritates information technology professionals, said Don Blough, vice president of MIS at Foodmaker Inc., a San Diego company that owns the Jack in the Box restaurant chain.

"It's hard to even know what to believe," Blough said. The case hasn't affected Foodmaker's technology buying decisions; it uses a mix of Microsoft and other products. □

Some see ploy in NT rename

► *Users resigned to even later arrival of OS*

By Sharon Gaudin

MICROSOFT CORP.'s decision to rename Windows NT as Windows 2000 has some corporate users preparing to wait even longer for the release date than Microsoft is publicly predicting.

"I had doubts about it coming out in 1999 before the name change," said James Graham, a network architect at Atlanta-based BellSouth Business Systems Inc.

"They're trying to cushion the blow a little bit in case the dates slip. But I think it would be better to wait til 2000 anyway because people will be too busy with year 2000 issues to go crazy making the switch," Graham said.

Last week, Microsoft announced that its heavy-duty NT operating system would take on the Windows 2000 moniker, signaling the end of Microsoft's investment in DOS-based operating systems such as predecessors Windows 3.1, 95 and 98.

Because Windows 95 shipped

in 1995 and Windows 98 shipped in 1998, some industry watchers said they find it hard to believe Windows 2000 will come in 1999, as Microsoft executives, including CEO Steve Ballmer, relentlessly promised last week.

The wait will leave corporate

"They [Microsoft] are trying to cushion the blow a little bit in case the dates slip."

— BellSouth's James Graham

buyers with a couple of choices: wait for NT 5.0 while sticking with Windows 95 or 98 or moving to NT 4.0; or contemplate other server-based operating systems, such as Novell Inc.'s NetWare 5.0 and Sun Microsystems Inc.'s Solaris 2.7, which are on the move.

Indeed, while Microsoft con-

tinues to ponder a ship date, other operating system vendors are hitting the ground running.

Sun announced a 64-bit Solaris last week [CW, Oct. 26]. IBM is teaming up with The Santa Cruz Operation Inc. and Sequent Computer Systems Inc. to build a merged Unix for the Merced chip (see story, page 1). And Novell's NetWare 5.0 shipped last month.

As for Graham, he said at this point if he needed more NT, he wouldn't wait for NT 5.0 but would buy NT 4.0.

But he's also in the process of switching over 68 application servers from NT to Unix.

He said the move is based on the fact that Unix scales better.

Analysts at International Data Corp. (IDC), a sister company to Computerworld, and Forrester Research Inc. predicted that most users would move to NT 4.0.

"Even if a company has plans to go to NT 5.0, the majority of organizations are going to wait a year to 15 months to implement it," said Bill Peterson, an analyst at Framingham, Mass.-based IDC.

"Now that Service Pack 4 for NT 4.0 has shipped with a lot of cool stuff, NT 4.0 is a solid product with an impressive installed rate," he added.

Isaac Applbaum, CEO of Concorde Solutions Inc., a subsidiary of Bank of America, said renaming Windows NT was a great marketing plan.

"They're hedging their bets," Applbaum said. "It's a brilliant idea. If NT 5.0 comes out in 1999, they're big winners. If it comes out in 2000, they can say, 'See, that's why we named it Windows 2000.'"

In Ballmer's keynote at the recent Network/Interop '98 conference, he said the fact that NT 5.0 still doesn't have a ship date bothers him. "It's still a ways in the future, and I feel terrible."

Microsoft has dragged its feet for more than two years talking about the NT 5.0 operating system. With an active directory and new security features, NT 5.0 is in the second phase of a

three-part beta-testing cycle. And despite the occasional slip of a date reference from various executives, an official ship date still hasn't been set. □

HOLDING STEADY

Have recent announcements by Microsoft* caused your company to reevaluate or modify its plans for Windows NT on the server?



■ Yes
■ No
■ Don't know

* Not committing to a shipping date for Windows NT 5.0 and public comments on lowering expectations for what the operating system will do

Base: 105 IT managers at companies with 200 or more employees who have Windows NT Server and any version of Unix in use

Source: Computerworld Information Management Group, Framingham, Mass.

There are
those with
the power to
accomplish
anything.



And those who should stay away from sharp objects.

Empower yourself with the world's only guaranteed network.

Here's a real amazing feat. A network you can count on to support your most important applications at the lowest cost possible. That's the power of Cabletron's Smart Network Guarantee.

1. More than twice the life expectancy of all competitive products
2. Less than half the cost of ownership of all competitive products
3. Three times the system bandwidth availability of all competitively priced products
4. Less than half the cost of implementing and operating all competitive networks
5. Less than half the cost of managing all competitive networks

If you can find a networking vendor whose products beat all five Cabletron guarantees, we'll service that solution for a full year...absolutely free! It's not magic, but it is the most powerful way to ensure that you accomplish your business goals. Only from Cabletron.

Call toll free **877-606-5975** for more information or to find out the name of your nearest Cabletron Synergy Plus reseller. Also, visit us on the web at www.cabletron.com.

With the industry's only guaranteed network, what do you have to lose?



CABLETRON
SYSTEMS

The Smart Networking Choice. Guaranteed.™

Sales automation projects still struggle

► *Benefit rates low, but users say key steps can make it work*

By Matt Hamblen

SALES AUTOMATION projects fail more often than not, yet ever-optimistic companies continue to install the software

and snap up the latest upgrades.

Five users last week said they're eager to try out new versions of sales software being released today by Carson City, Nev.-based Borealis Technology Corp.

and Scottsdale, Ariz.-based SalesLogix Corp.

Those companies are two of the dozens of vendors competing in a \$1 billion market expected to grow to \$5 billion by 2003, analysts said [CW, April 6].

Sales force automation includes every-

thing from contact management software to high-end systems that link managers and the sales force to the marketing department, support staff and even data warehouses.

At least 60% of sales automation projects fail to produce measurable benefits, and more than 75% of the businesses that install such systems are dissatisfied, according to Gartner Group Inc. in Stamford, Conn.

All five users interviewed said they're aware of the inherent dangers of sales automation projects. But they said they had increased their odds of success by taking two critical steps: training sales agents well and getting upper management involved early.

"Yes, installing this technology is a business change, and we got several corporate sponsors because we knew it had to be a cultural shift," said Bruce Mabel, manager of marketing data systems at Heidelberg USA Inc. in Kennesaw, Ga.

Mabel said it helped that 12 salespeople were involved in the pilot test of Borealis' Arsenal software, which is now used by 130 sales agents in 11 offices.

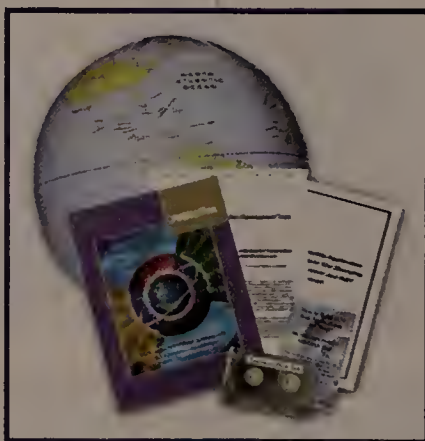
It's too soon to measure any productivity gains at Heidelberg, but the reaction has been "pretty positive," Mabel said.

Five users said they increased the odds of success in their sales force automation projects by taking two critical steps: training sales agents well and getting upper management involved early.

Wrestling...Boxing...Soap Operas. Taste. Courtesy of Prolifics.



Supplying demographic information about hundreds of thousands of pay-per-view transactions is no easy task. Syntellect Interactive Services, the world's leading provider of pay-per-view transactional services, turned to Prolifics to bring this data to their client cable companies on the Web in real time. Now the cable companies have the data they need to keep this guy tuned in.



YOURS FREE: Find out what it takes to develop applications for the real world.

Ask for your **FREE** Developers Kit including White Papers, evaluation guidelines, our insightful Developers Chalk Talk audiocassette, and your own Prolifics Real World beach ball.

CALL 800-675-5419 or email realworld@prolifics.com.

Prolifics. Development Tools and Services For The Real World

Prolifics.

www.prolifics.com • 116 John Street • New York, NY 10038 • (800) 675-5419 • fax (212) 608-6753

At the Boston-based furniture retailer Office Environments of New England, Jennifer Roberts was hired only two months ago to oversee implementation of SalesLogix's Sales Information System for 50 furniture sales agents.

The project's in its infancy, but "We have high hopes for the benefits it will provide for sales reps and for giving management information about the sales cycle," Roberts said.

The system will sound alarms for salespeople to make follow-up calls on customers and will track which marketing brochures get the most customer response.

"Without a product to track your results, you are shooting in the dark," Roberts said.

Sudhir Bajaj, CIO at Cyrk Inc. in Gloucester, Mass., said SalesLogix had performed well for nine months with 55 agents selling promotional items nationwide. "The issues of its success are not technical and are more organizational and who's going to see the value," he said. □

MOREONLINE ►

For *Computerworld* articles, white papers, books and other resources related to sales force automation, visit *Computerworld* online.

www.computerworld.com/more

When business wants to unite the Web and the enterprise...

Business uses EDA middleware.

"Information Builders helped us prototype a home banking system in two weeks."

*Jorge Sosa, Application Development Manager,
Grupo Financiero Bital*

Using Java and Information Builders' EDA middleware, Grupo Financiero Bital in Mexico City is able to quickly create applications that provide managers and customers with Web access to its mainframe transaction and financial systems.

"With our new intranet-based decision support system we are able to roll up budget projections in less than 10 minutes."

*Kevin Rasmussen, Expert Application
Coordinator, Gulf Canada*

In the oil and gas business, proactive monitoring of production and costs versus operating budgets is a mission-critical function. That's why Gulf decided it needed a faster way to collect and analyze this information from its field locations around the world. The solution... a Web-enabled data entry and reporting system using Information Builders' EDA middleware, Cactus and WebFOCUS. The application, which required almost no training, lets each location update Gulf's databases right over the corporate intranet. Analysts can now roll up the data in less than 10 minutes, create reports from their Web browsers, and evaluate the impact of regional decisions on the big picture.

"In less than two months, we reduced order status calls by 40%, enhanced customer relations, and stimulated new business by driving customers to our Web site."

*Dan Bond, Data Warehouse Manager,
Paradyne Corporation*

Using Information Builders EDA middleware and WebFOCUS reporting engine, Paradyne built a Web-based order status system that allows customers to launch dynamic queries against live mainframe data.

The whole system was built in 90 days. And in less than two months Paradyne reduced order status phone calls by over 40%.

CALL THE BUILDERS

Featured At



May 23-26, 1999 in Orlando

www.ibi.com/ecw
(800) 969-INFO

In Canada call (416) 364-2760

WebFOCUS, FOCUS and EDA/SQL are trademarks of Information Builders, Inc.

Information Builders

Building Tomorrow's
Information Systems

FRANKLY SPEAKING

Don't forget the users

FRANK HAYES

They just forgot. No, really, it just slipped the minds of the IT people at Federal Express Corp., retail chain Meijer Inc. and publisher Bureau of National Affairs Inc.

They should have talked to users before rolling out certain new systems during the past year. They knew it then, and they know it now. But at the time, they just forgot.

And as you already know from a front-page story in last week's *Computerworld* ["Migration plans"], those bouts of amnesia were expensive. The Bureau of National Affairs wasted \$1 million and six months on a new payroll system the company had to junk. Meijer had to rip out its new E-mail system — a \$3 million, 18-month investment.

FedEx may face the biggest financial hit of all from its new pilot-scheduling system. Thrown into production three

months after it was purchased, the new system soured FedEx's relations with its 3,200-member pilots union. That may lead to much more stringent work rules in a new contract now being negotiated — or, if things really get messy, a strike.

All those companies forgot to talk to users — the people who would be affected by the new system. That lapse will cost them millions of dollars. And that amnesia wasn't just



Build user input into the way you do every project.

stupid or foolish or careless.

It was inevitable. It was bound to happen. Not because those IT people don't care about their users. They do. In one case, users were even consulted — but not in the detailed, specific way that

would get to the heart of how the system would fit their needs.

No, it was inevitable because banging heads with users wasn't built in to the way those companies do *every single* IT project. Bringing in users was a priority — but it wasn't a habit, a reflex, second nature. It wasn't, in short, something IT couldn't forget.

What about you? Is your shop in line for its own million-dollar memory lapse?

Do you bring users in from the start of every IT project, built or bought? Is it such standard procedure that you would require special dispensation from the CEO *not* to find out, directly from users and before a nickel is spent on technology, what they need and whether a new system makes more real business sense than what they're already using?

Or does that usually open a can of worms so ugly that you've never built that initial consultation in to your standard development process?

Do you bring users in again for the dog-and-pony demonstrations and encourage them to spot what's wrong and what's missing? Do their comments, complaints and criticisms become key specifications for the new system?

Or do you spend your face time with users explaining that they just don't understand the new system's requirements?

Do you test prototypes or pilot versions with users early and often? Do you eliminate surprises for users as thoroughly and methodically as you eliminate bugs?

Or do you just assume they'll love the hot new technology as much as you do?

Sure, users can be a pain. They'll play politics, ask the impossible, give you double-talk and grumble about everything. They can waste your time, sap your energy and drive your development process straight into the ground.

But you can't afford to lose their input — not if you want systems that will give them, and the company, real business value.

Build that user input in to the way you do every project. Make it a habit so deeply ingrained that you can't possibly forget.

Because if you *can* forget, you *will*. And it will cost you dearly — in money, in time and in the trust of the businesspeople who use your systems. And you can bet *they'll* remember. □

Hayes is *Computerworld's* staff columnist. His Internet address is frank_hayes@cw.com.

SHORTS

44 charged with online fraud

The Securities and Exchange Commission (SEC) filed charges against 44 parties suspected of committing online securities fraud in 23 cases. The SEC said the suspects allegedly peddled 235 companies as good investments without mentioning that they accepted more than \$6.3 million and cheap insider stock in exchange for touting the firms. The charges resulted from a nationwide Internet sweep.

FAA radar glitches found

Problems with a radar software upgrade installed two months ago at an air-traffic control facility in Elgin, Ill., have caused officials to lose track of some airplanes flying to and from Chicago-area airports, including O'Hare International. No accidents have occurred because of glitches in the system, dubbed Automated Radar Terminal System IIIE, a Federal Aviation Administration regional spokesman said last week. He declined to give a timetable for fixes or to specify exactly what's wrong. "The system is assessed throughout the day and night and certified [as meeting FAA safety requirements] every day," he said.

Immigrant database readied

Ellis Island has begun computerizing the records of 17 million immigrants who entered the U.S. there from 1892 to 1924 and will set up 34 workstations for people who want to trace their roots. Volunteers from the Church of Jesus Christ of Latter-day Saints are entering the information into a database. The project, by Statue of Liberty-Ellis Island Foundation Inc., will cost \$15 million. The foundation has raised \$11.5 million so far.

JavaScript bug hits Netscape

Netscape Communications Corp. last week logged a JavaScript bug that affects its Communicator 4.07 and newly released Communicator 4.5 Web browser suites. The bug, which allows a hacker to read the contents of someone else's cache or directory, is similar to other privacy bugs that have been logged in recent months, a Netscape spokesman said. Netscape is working on fixes. In the meantime, users can turn off JavaScript when they go to unknown sites or clear their caches before Web surfing, a Netscape spokesman said.



Customer: Dr Pepper/Seven Up Inc., Plano, Texas

Prime contractor: Computer Sciences Corp. (CSC), El Segundo, Calif.

Terms: \$25 million, five years

Highlights: The largest noncola soft-drink company in North America is outsourcing the support, maintenance and upgrades of its SAP applications so it can focus on its core soft-drink business. Fifteen IT employees will be transferred to CSC.

Cyberspace shuttle traffic

CNN Web servers experienced their highest-ever load last Thursday when the space shuttle *Discovery* launched with John Glenn aboard. Around 2:15 p.m., the CNN site handled 494,000 hits per minute, compared with 340,000 hits per minute when the Starr report detailing President Clinton's sexual encounters with Monica Lewinsky was released. Broadcast.com in Dallas also reported "unprecedented demand" for news on the shuttle launch.

Novell wins piracy case

Novell Inc. in Provo, Utah, last week was awarded \$800,000 in damages in its software piracy suit against Atlanta-based Galatech Inc. Novell sued the company in November last year, alleging that Galatech sold and distributed counterfeit copies of Novell's NetWare operating system.

Bulk E-mail sold at online site

A New Jersey Internet service provider said he will continue to use eBay's online auction Web site to sell his CD-ROMs of bulk E-mail addresses in spite of opposition from the antispam community. Ed Smith, systems administrator at CompuNet Information Network, said he has been selling the E-mail addresses at eBay for the past few months and has seen similar products for sale there. Smith said sales of his company's CD-ROMs have increased by \$500 per month. eBay officials said the company neither edits nor assumes liability for the contents of a user's listing.

SHORT TAKES Strong sales in the company's storage business helped Westboro, Mass.-based Data General Corp. eke out a modest profit of \$3.7 million on revenue of \$383.7 million for the fourth quarter of fiscal 1998, which ended Sept. 26. . . . Legato Systems Inc. announced last week that it will acquire FullTime Software Inc. in a stock deal valued at \$69 million. Palo Alto, Calif.-based Legato sells server backup applications; San Mateo, Calif.-based FullTime makes software for server clustering and management. . . . Glenn L. Habern, 53, the former CIO at H. E. Butt Grocery Co. in San Antonio, has been named senior vice president for new business development at Wal-Mart Stores Inc.

**WORK THE
WEB**

MONEY TALKS.

**AND IT'S SAYING THE BIGGEST
BANKS USE LOTUS.**

100% of U.S. money-center banks use Lotus Notes® and Domino™ because they provide the most stable and secure platforms for sharing trainloads of highly confidential information. It's also easy for them to develop custom applications that help exploit the efficiencies of the Web. Add to this the fact that they've saved millions while improving customer service and the whole deal speaks volumes.

To find out more, visit our Web site at www.lotus.com/worktheweb.

Lotus

An IBM Company

Putting in-store service online

► Nordstrom will let customers E-mail a personal shopper to find items

By Sharon Machlis

CAN NORDSTROM INC., the Seattle-based retailer that's become synonymous with stellar customer service, transfer that glittering reputation to its new online store? Electronic retailers everywhere will be watching.

"Greater companies than Nordstrom have been attempting to mimic the same image they have off-line, and it's not easy," said Julia Pickar, an analyst at Zona Research Inc. in Redwood City, Calif.

Indeed, it's tough to recreate

a smiling salesperson who offers you a seat, brings you a soda and picks out some suits and matching ties while you wait. "E-commerce takes place in a very different venue. By its nature, E-commerce has its limitations," said Nordstrom spokeswoman Paula Stanley.

Instead, the department store hopes to provide what online shoppers appear most eager for: convenience and ease of navigation. "Our goal is to provide a translation of service in-store," she said. For example, if shoppers can't find what they're

looking for on the site, they can E-mail Nordstrom Personal Touch, where a personal shopper will scour a brick-and-mortar store, E-mail possible choices and then ship out a selection — all at no extra charge.

Nordstrom.com checks its inventory in real time, so once an order is placed, the item can be reserved from stock. If it isn't in stock, users are notified right away. That was done via custom software that links up IBM's Net.commerce merchant server with Nordstrom's Macs legacy direct-mail system. The site also

features some common customization features, such as gift reminders and personalized address books that store information on clothing sizes and preferences.

"The good news for Nordstrom is that the current state of online customer service and care is extremely poor," said Nicole Vanderbilt, an analyst at Jupiter Communications Inc. in New York, "so the opportunity to differentiate your storefront based on that is fairly large. However, it is difficult to execute."

Good service is as much about trying to anticipate customer needs as "the smiling salesperson who greets the customer," she said. "By taking their understanding of the customer online, Nordstrom has a



Nordstrom hopes to provide online shoppers with convenience and ease of navigation

shot at good execution. ... Their best bets are strong telephone and E-mail support with rapid response times, something that will require significant investment."

Nordstrom is starting out with limited merchandise offerings — about 53,000 inventory items, compared with several hundred thousand in a typical store — but plans to add more in the next few months.

"We don't know what the customer wants. We have a lot to learn," Stanley conceded. □

Group to demo embedded Java

By Carol Sliwa

IMAGINE THE sight of a dozen or so robotic arms picking up objects and handing them off to other robotic arms.

At this week's Embedded Systems Conference in San Jose, Calif., a vendor group led by Hewlett-Packard Co., IBM and Sun Microsystems Inc. plans to use robotic arms to demonstrate that Java can be used in real-time embedded systems.

Java potentially can provide a benefit for companies that need embedded devices with real-time operating systems —

grammer," said Anne Thomas, an analyst at Patricia Seybold Group in Boston, noting that real-time programmers are a "scarce commodity."

"And Java is such a highly productive programming language that they're going to save time any time they have to write an embedded application," Thomas added.

John Swartzendruber, manager of enterprise architecture at Eli Lilly and Co. in Indianapolis, said it can be tedious to do custom development for his company's myriad lab devices. Java-enabled embedded devices could ease this.

"It is not a simple chore to take a series of devices from different manufacturers and get them to play together. Anything you can do to manage the uniqueness of this equipment would save time," he said.

Tomorrow's demonstration is significant for Java programmers, vendor participants said, because it will show the technology's potential to run on a variety of platforms, operating systems and virtual machines that interpret the Java code.

"The significance of the demo is that you get write once, run anywhere properties, which is crucial to embedded system industries because of the very, very large number of devices, processors and boards" that exist, said Greg Bollella, an em-

bedded systems expert at IBM.

Critics argue that the real-time portion of the application isn't written in Java. "The demonstration does not illustrate Java being used for real-time operations," said Charles Fitzgerald, a group product manager at Microsoft Corp., which has been participating in the real-time Java group's work.

But Thomas said having the majority of the application written in Java would be an enormous time-saver compared with porting all the code.

But hashing out the specification could be a thorny process.

A group of about 45 organizations — including vendors and academics — has been working since June on the requirements for a real-time extension to the Java platform. The National Institute of Standards and Technology has been tracking the efforts, which members have hailed as open and inclusive.

Java's creator, Sun, wants that group to proceed through its formal, auditable standards process, which is now under discussion among licensees and nonlicensees. But many remain uncomfortable with Sun's control and the intellectual property restrictions [CW, Oct. 19].

Some nonlicensees already are saying they don't think they'll be able to sign Sun's participation agreement.

"We're looking for openness and a vendor-neutral process," said Doug Higgins, president of NewMonics Inc. in Ames, Iowa. "If you have to sign a [nondisclosure agreement] and a Sun license, that's not very open from our perspective." □



A robotic arm demo of Java used in an embedded system will show its potential to run in real-time applications

whether medical monitor, telephone or gas pump — because they can change the task the device performs without having to rip out the software and rewrite the program. Instead, they could download a Java application to the device.

"You no longer will need a real-time programmer to develop an embedded application. You can just go hire a Java pro-

Hacker group blasts E-mail vendors for shoddy code

By Roberta Fusaro
ORLANDO, FLA.

A WAVE OF highly publicized E-mail bugs came and went this summer, but vendors and users still haven't learned their lesson, said members of a Boston-based hacking group at last week's Electronic Messaging Association's Solutions Summit here.

Members of the Lopht Heavy Industries — an underground group of volunteers who try to reveal holes in popular hardware and software programs so vendors can fix them — said vendors still are rushing E-mail and other products to market with inferior code.

But users aren't holding messaging vendors responsible, one Lopht member said, a claim supported by users at the conference.

For example, one user from a large East Coast insurer wondered if the security measures would detract from the speed of her firm's business-quality E-mail system. "People don't want to wait for their E-mail," said the messaging manager, who requested anonymity. But Lopht panelists noted that stronger security is worth the trouble. "OK, so you had to wait longer for

the message, but you're not getting a virus in the attachment," a Lopht member said.

Ian Gardiner-Smith, vice president of messaging at Credit Suisse First Boston based in Zurich, said the bank worries about E-mail security but has a stringent usage and configuration policy in place. "The problem is, nothing really bad has happened yet. Business managers are naive about computer things; they base their risk analysis on what's gone before — which is nothing," he said.

Driving the product makers is the need to speed up product cycles, even if that means issuing flawed software or hardware that will require bug fixes later, a Lopht member said.

But a Microsoft spokesman who asked not to be identified told *Computerworld* that all products, including its messaging wares, go through a rigorous beta-testing period from a variety of testers before they're released. He also said the company "tries to be open and honest with customers" about any product flaws. Once glitches have been reported by users or discovered in-house, fixes are typically posted between 24 and 48 hours, the spokesman said. □

WORK THE
WEB.

TO CURE
**BUREAUCRATIC
BLOCKAGE,**
MORE PHARMACEUTICAL COMPANIES
RECOMMEND USING LOTUS.

The issue is moving mountains of paperwork quickly through massive organizations. Drug companies, the FDA, managed care corporations. All with different desktop and server platforms. All around the world. Eighteen of the world's 20 largest pharmaceutical companies use Lotus Notes® and Domino™ because it has helped them save millions and get their products to market faster. And that makes everyone feel better. To find out more, visit our Web site at www.lotus.com/worktheweb.

Lotus

An IBM Company

Over 18,000 Lotus Business Partners can provide solutions for you today. For more information, call 1 800 872-3387, ext. E422. In Canada, call 1 800 GO LOTUS. © 1998 Lotus Development Corporation, an IBM company. All rights reserved. Lotus and Lotus Notes are registered trademarks and Domino and Work the Web are trademarks of Lotus Development Corp. IBM is a registered trademark of International Business Machines Corp.

CIOs share retention tips

► Call for building community for IT staffers, better college courses

By Thomas Hoffman
SEATTLE

CIOs at the SIM Interchange '98 conference here last week shared their best tips for dealing with the industry's IT labor shortage. One of the most overlooked strategies: making the information technology department feel like a community.

A July survey of 98 members of the Society for Information Management (SIM) revealed that one of the main things IT professionals seek in an employer is a sense of community.

One company that has taken that message to heart is Kraft Foods Inc. The Northfield, Ill.-

based company let a group of relatively new IT employees create a grassroots organization called the New IS Professional Council, which lets staffers share ideas about career development and do volunteer work.

The key to the council's success, said Kraft CIO Jim Kinney, is that senior management "had nothing to do with it — it was developed entirely by our staff."

Other companies, such as Unisys Corp., let IT staffers use the corporate intranet for career development. The Unisys intranet has a Career Fitness Center, where technologists can click on icons such as "Skill Shaper" for tips on how to hone

their business and technical skills.

Since the system was deployed last fall, turnover in Unisys' IT organization has shrunk from double digits to single digits, said Kerry Ruhl, vice president of human resources technology.

MONEY COUNTS

The SIM survey found that financial compensation continues to have the greatest influence on employee retention. But keeping people often requires more than just meeting offers of 20% salary increases, said Paul Ayoub, a vice president at Cigna Corp. in Philadelphia. "401(k) plans are nice, but few companies offer pension

The Society for Information Management proposed five strategies for dealing with the IT labor shortage in the U.S.:

- 1 Technology leaders should encourage user self-reliance
- 2 IT vendors must collaborate to reduce the complexity of their products and services
- 3 The supply of labor for IT deployment can be increased through continuing education, including training workers outside of IT
- 4 Greater collaboration between schools and corporations to provide skills needed by the industry
- 5 Promotional campaigns should be established at the high school and junior high school level to increase awareness of career opportunities in IT

Source: Society for Information Management, Chicago

plans, and that can be a real clincher," he said.

In a position paper, SIM urged IT vendors to work together on product compatibility and reducing complexity, which would lessen the burden on already-thin IT staffs.

SIM also recommended that businesses work more closely with schools to make sure their courses align with corporate requirements.

The problem for folks such as Anne Wendt is that universities don't carry courses such as Anti-Slacking 101.

Wendt, president of The Wendt Group Inc., a New York-based electronic-commerce consultancy, recently had to fire a handful of developers who were

goofing off and failing to complete their assigned projects.

"I'm paying these people \$100 an hour, since that's what the market dictates, and they're off surfing the Web" and doing other nonwork-related activities, she said. □

Allan E. Alter contributed to this report.

& Kraft Foods' CIO Jim Kinney chops IT turnover to 5%. Page 71

Gates heralds easy-to-use products

► Users hope simpler means fewer bugs

By Thomas Hoffman
and Allan E. Alter
SEATTLE

BILL GATES is selling simplicity, but some Microsoft customers aren't buying his pitch.

"Simplicity," joked John F. Rudin, CIO at Reynolds Metals Co. in Richmond, Va., "is coming out in the next release."

With its Windows, Office and BackOffice products expected to represent 80% of Microsoft Corp.'s revenue for the next five years, the "biggest initiative" at Microsoft is making new versions of those products easier to use, said Chairman and CEO Bill Gates.

Gates, the keynote speaker at the Society for Information Management (SIM) Interchange '98 conference here last week, talked about how Microsoft's push to make its software less complex is evident in new product development for forthcoming packages such as Windows 2000 and Office 2000.

For example, Windows 2000 (formerly known as Windows

NT 5.0) will have a feature that lets users automatically "repair" broken applications and remove unused ones, said Chris Caposela, a Microsoft program manager who demonstrated some of the new features to SIM conference attendees.

Gates said companies need simpler products because they "only get a small percentage of the value out of [their information technology] investments."

The goal for corporate IT departments, Gates said, should be to create seamless interfaces so that all customer and product information can be easily

Greenbrier Cos., a Lake Oswego, Ore., maker of freight cars. Gates' statement, Alexander said, "shows how he doesn't understand IS."

In his keynote, Gates said that five years from now, there will be computers that "can see, listen and learn." But Jane Burgess, manager of warehouse systems at DSC Logistics Inc. in Des Plaines, Ill., said she would be satisfied with seeing "fewer errors" in Microsoft's software before then. Gates continued to dodge the question of when customers should expect Windows 2000 to ship. He said 300

Companies need simpler products because they "only get a small percentage of the value out of [their IT] investments." — Bill Gates, at SIM conference



accessed across multiple computing platforms.

Placing the onus on IT organizations to simplify access to that information irked one conference attendee. "Wouldn't we [in IT] have done that already if we could have?" asked Norm Alexander, director of IS at The

customers have signed up for a "rapid deployment" program "to show us where we are with it."

Microsoft is still targeting the first quarter of next year to release Windows 2000 beta 3, Gates said. The timing of the commercial rollout, he said, is "a quality thing." □

Oracle does warehousing

CONTINUED FROM PAGE PAGE 1

to-end data warehousing story," said Robert Craig, an analyst at Hurwitz Group Inc., a Framingham, Mass.-based consultancy. "It puts Oracle in a much stronger position than they ever were in before to be a major player in data warehousing. The only piece that sounds like it's missing is data-mining capabilities — which they'll probably partner with other vendors for."

"This is definitely news we've been waiting for," said Dan Vlamis, president of Vlamis Software Solutions Inc., a Kansas City, Mo.-based consultancy. "To have integration from Express through Discover will help us immensely."

On Tuesday, Oracle also will announce the following:

- The acquisition of One Meaning Inc. and its Marlow metadata management software.
- The purchase of the Aptiva line of analytical, activity-based costing software from PricewaterhouseCoopers.
- The acquisition of Graphical

Information Inc. along with its Dynamic Balanced Scorecard application.

■ The latest edition of Oracle's Data Mart Suite, which combines Oracle8 with design, building and reporting tools.

■ Oracle Application Business Intelligence System, a business intelligence warehouse that functions as a decision-support system for Oracle applications.

■ An alliance with IBM and Unisys Corp. on a standards proposal for a common metadata warehouse interchange format called XMI, which lets developers exchange code and meta-data over the Internet using a common standard. Most vendors have announced support for Microsoft Corp.'s metadata standard, but several said they would also support the competing standard if users wanted it.

■ The sharing of meta-data in the Oracle repository by its Discover, Express and Reports tools. □

MOREONLINE

For more coverage of the IT labor shortage, visit Computerworld online.
www.computerworld.com/more

☒ **51 issues for \$48.~~00~~ \$39.95**

Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of \$8.05 off the basic subscription price.

First Name	MI	Last Name
------------	----	-----------

Title	Author	Year	Journal	Volume	Page
1. The Effect of Temperature on the Rate of Reaction of Hydrogen Peroxide with Potassium Iodide	John Doe	2018	Journal of Chemical Education	95	1234
2. Kinetic Study of the Reaction Between Sulfur Dioxide and Hydrogen Sulfide	Jane Smith	2017	Chemical Kinetics and Catalysis	102	5678
3. The Influence of pH on the Stability of Aqueous Solutions of Various Salts	Michael Brown	2019	Environmental Chemistry Letters	110	9012
4. Kinetic Analysis of the Reaction Between Nitric Oxide and Carbon Monoxide	Sarah White	2016	Physical Chemistry Chemical Physics	18	3456
5. The Effect of Catalyst Concentration on the Rate of Reaction of Hydrogen Peroxide with Potassium Iodide	David Green	2018	Journal of Chemical Education	95	1234
6. Kinetic Study of the Reaction Between Sulfur Dioxide and Hydrogen Sulfide	Jane Smith	2017	Chemical Kinetics and Catalysis	102	5678
7. The Influence of pH on the Stability of Aqueous Solutions of Various Salts	Michael Brown	2019	Environmental Chemistry Letters	110	9012
8. Kinetic Analysis of the Reaction Between Nitric Oxide and Carbon Monoxide	Sarah White	2016	Physical Chemistry Chemical Physics	18	3456
9. The Effect of Temperature on the Rate of Reaction of Hydrogen Peroxide with Potassium Iodide	John Doe	2018	Journal of Chemical Education	95	1234
10. Kinetic Study of the Reaction Between Sulfur Dioxide and Hydrogen Sulfide	Jane Smith	2017	Chemical Kinetics and Catalysis	102	5678
11. The Influence of pH on the Stability of Aqueous Solutions of Various Salts	Michael Brown	2019	Environmental Chemistry Letters	110	9012
12. Kinetic Analysis of the Reaction Between Nitric Oxide and Carbon Monoxide	Sarah White	2016	Physical Chemistry Chemical Physics	18	3456
13. The Effect of Catalyst Concentration on the Rate of Reaction of Hydrogen Peroxide with Potassium Iodide	David Green	2018	Journal of Chemical Education	95	1234
14. Kinetic Study of the Reaction Between Sulfur Dioxide and Hydrogen Sulfide	Jane Smith	2017	Chemical Kinetics and Catalysis	102	5678
15. The Influence of pH on the Stability of Aqueous Solutions of Various Salts	Michael Brown	2019	Environmental Chemistry Letters	110	9012
16. Kinetic Analysis of the Reaction Between Nitric Oxide and Carbon Monoxide	Sarah White	2016	Physical Chemistry Chemical Physics	18	3456
17. The Effect of Temperature on the Rate of Reaction of Hydrogen Peroxide with Potassium Iodide	John Doe	2018	Journal of Chemical Education	95	1234
18. Kinetic Study of the Reaction Between Sulfur Dioxide and Hydrogen Sulfide	Jane Smith	2017	Chemical Kinetics and Catalysis	102	5678
19. The Influence of pH on the Stability of Aqueous Solutions of Various Salts	Michael Brown	2019	Environmental Chemistry Letters	110	9012
20. Kinetic Analysis of the Reaction Between Nitric Oxide and Carbon Monoxide	Sarah White	2016	Physical Chemistry Chemical Physics	18	3456

Company	Revenue	Profit	Assets	Liabilities	Equity
ABC Corp.	100	20	120	80	40
DEF Inc.	200	40	220	160	60
GHI Ltd.	300	60	320	240	80
JKL Co.	400	80	420	320	100
MNO Corp.	500	100	520	400	120
PQR Inc.	600	120	620	480	140
STU Ltd.	700	140	720	560	160
VWX Co.	800	160	820	640	180
YZA Corp.	900	180	920	720	200
BCD Inc.	1000	200	1020	800	220

E-mail address _____

Address	Value	Comment
00000000	00000000	
00000004	00000000	
00000008	00000000	
0000000C	00000000	
00000010	00000000	
00000014	00000000	
00000018	00000000	
0000001C	00000000	
00000020	00000000	
00000024	00000000	
00000028	00000000	
0000002C	00000000	
00000030	00000000	
00000034	00000000	
00000038	00000000	
0000003C	00000000	
00000040	00000000	
00000044	00000000	
00000048	00000000	
0000004C	00000000	
00000050	00000000	
00000054	00000000	
00000058	00000000	
0000005C	00000000	
00000060	00000000	
00000064	00000000	
00000068	00000000	
0000006C	00000000	
00000070	00000000	
00000074	00000000	
00000078	00000000	
0000007C	00000000	
00000080	00000000	
00000084	00000000	
00000088	00000000	
0000008C	00000000	
00000090	00000000	
00000094	00000000	
00000098	00000000	
0000009C	00000000	
000000A0	00000000	
000000A4	00000000	
000000A8	00000000	
000000AC	00000000	
000000B0	00000000	
000000B4	00000000	
000000B8	00000000	
000000BC	00000000	
000000C0	00000000	
000000C4	00000000	
000000C8	00000000	
000000CC	00000000	
000000D0	00000000	
000000D4	00000000	
000000D8	00000000	
000000DC	00000000	
000000E0	00000000	
000000E4	00000000	
000000E8	00000000	
000000EC	00000000	
000000F0	00000000	
000000F4	00000000	
000000F8	00000000	
000000FC	00000000	

City	State	Zip
------	-------	-----

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew

U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295. Foreign orders must be prepaid in U.S. dollars.



A decade of horrors
 For 10 years, the Computerworld Smithsonian Awards have honored excellence in IT pages 37 and 71

COMPUTER WORLD

Free information, the Information Technology Council's quarterly, features the best computer-world news. No. 42 (p. 12) 100 pages. \$4.00

Security tool blocks document misuse

ENABLES TIGHTER CONTROL OF DIGITAL INFORMATION

On July 1, **Secure** became a reality as a software tool that can be used to prevent access to sensitive information by unauthorized users. In a recent report, the Information Technology Council's quarterly, features the best computer-world news. No. 42 (p. 12) 100 pages. \$4.00

Secure is a software tool that can be used to prevent access to sensitive information by unauthorized users. In a recent report, the Information Technology Council's quarterly, features the best computer-world news. No. 42 (p. 12) 100 pages. \$4.00

Why Is Jack Welch Angry?

This photograph was taken at a press conference in New York City. Jack Welch, CEO of General Electric, is seen in the foreground, looking angry. He is surrounded by a crowd of people, some of whom are holding cameras. The background is a large, dark, and somewhat blurry, suggesting an indoor setting with many people.

Photograph, page 44

Uncertainties stall move to euro standard

By [Name], [Location]

WASHINGTON—The European Central Bank (ECB) is not yet ready to move forward with the euro standard, according to a report from the ECB's president, Hans Eichel. Eichel said that the ECB is still in the process of evaluating the impact of the euro standard on the European economy. He also noted that the ECB is still in the process of evaluating the impact of the euro standard on the European economy.

British offshore audit

By [Name], [Location]

LONDON—The British government has announced that it will be conducting an audit of the British offshore industry. The audit is being conducted by the British government's audit office, the Comptroller and Auditor General. The audit is being conducted to determine the impact of the British offshore industry on the British economy.

BEETLEMANIA

• The IT market bashes VLS's Beetle command

By [Name], [Location]

NEW YORK—The IT market is bashing VLS's Beetle command, according to a report from the IT market's leading analyst, Gartner. Gartner said that the Beetle command is a software tool that can be used to prevent access to sensitive information by unauthorized users. Gartner also noted that the Beetle command is still in the process of evaluating the impact of the Beetle command on the IT market.

Online ticket sales jump; upload good

By [Name], [Location]

NEW YORK—Online ticket sales have jumped, according to a report from the IT market's leading analyst, Gartner. Gartner said that online ticket sales have jumped by 10 percent over the last year. Gartner also noted that online ticket sales are still in the process of evaluating the impact of online ticket sales on the IT market.

94 Best computer news items

By [Name], [Location]

NEW YORK—The 94 Best computer news items have been announced by the Computerworld Smithsonian Awards. The awards are given to the best computer news items published in the Computerworld magazine. The awards are given to the best computer news items published in the Computerworld magazine.

COMPUTER WORLD



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

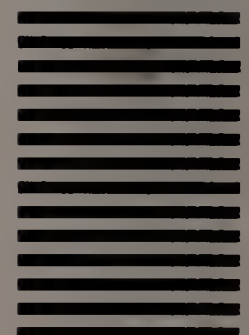
BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-2144



Users seek fix for data warehousing woe

By Stewart Deck

VENDORS MAY BE preoccupied with Microsoft Corp.'s planned entry into data warehousing via the imminent arrival of SQL Server 7, but users attending this week's Data Warehousing Institute's Leadership conference in Orlando, Fla., are much more focused on their own projects and problems.

management, data mining techniques, warehouse development strategies and warehouse Web interfaces are what people will be asking and learning about.

How-to sessions are always well-attended at such conferences because of the “unacceptably high failure rate of data warehouse

projects," said Robert Craig, an analyst at Hurwitz Group Inc., a Framingham, Mass.-based consultancy. "Many people want to find out how to fix what they have and get some usefulness out of their investments."

George Trudel, a business and technology consultant at Blue Cross/Blue Shield of Rhode Island in Providence, said he's always interested in learning more about data modeling strategies and mining and intelligence tools for the same reason — to get better results from his warehouse. "I'm looking at what I can do or use to streamline the process of getting more useful data," Trudel said.

META DATA OR DIE

Meta data — the summary information about what data is in the warehouse — is a hot topic. "Meta data is like the oil for an engine. You can forget about it for a little while, but without comprehensive, synchronized meta data, your warehouse will die," said Wayne Eckerson, vice president of technology services at the Data Warehousing Institute.

Users are starting to recognize that the combination of meta data and modeling will let them understand more about how each of their systems fits together with the goal of making a connected enterprise, Craig said.

Meta data is a hot topic right now because more and more long-term business decisions are being made on the basis of data warehouse data, said Michael Abbey, president of Michael Abbey Systems International Inc., an independent consultancy based in Ottawa.

"People analyzing this data have to be intimately familiar with what the data means and how it can be applied. And meta data is key to this intimate understanding," Abbey said.

The finalists selected by conference organizers as Pioneering Products of 1998 also show how much attention is being paid to meta data. Tools for meta-data management and administration captured three of the six finalist spots.

Plenty of products also have come out recently that help users populate their data warehouses with enterprise resource planning (ERP) system information. "We are certainly looking into this, but haven't come to any decisions yet," Trudel said.

"Most ERP vendors are way behind in providing these tools themselves," Craig said, so users are turning to independent toolmakers to ease the process.

Warehouse administrators also are finding Web interfaces to be a dream come true. "With a Web interface, we

can give more users access to data with next to no maintenance or administrative costs," said Larry Costello, director of financial information systems at Textron Inc., a \$9.5 billion multi-industry company based in Providence. "We had tried a client/server front end, but it was a bear to maintain and required lots of redesign any time we simply realigned a division." That's why Costello said he is looking for Web-based access tools. □

Introducing the Enterprise Modeling Dream Team.

PLATINUM Enterprise Modeling Suite

ERwin
data modeling

Paradigm Plus component modeling

BPwin
business process
modeling

ERwin. Paradigm Pius. BPwin.

Three modeling all-stars now

together in the PLATINUM

Enterprise Modeling Suite.

Business processes. Data.

Components. Your business depends on them. They need to work together. And now, your enterprise can unite them and gain the breakthrough productivity of the world's most trusted modeling tools.

The PLATINUM
Enterprise Modeling
Suite is the first to integrate all
the real world pieces of enterprise
modeling. Now you can build business
process, data and object models,
synchronizing your databases and
applications.

You can integrate business process and object models with existing ERwin data models. Take advantage of UML. And develop and maintain high-quality databases and applications much faster and easier than ever before.

Visit our Enterprise Modeling

Resource Center today at

[www.platinum.com/dreamteam.](http://www.platinum.com/dreamteam)

Visit today, or request an information kit by calling 1-800-78-ERWIN.


UNIFIED
MODELING
LANGUAGE

PLATINUM
TECHNOLOGY

Windows NT = ready



pentium® II
xeon™
PROCESSOR

For mission-critical operations, it is time to place an order for an HP NetServer. HP's Intel®-based server LXR 8000 with Pentium® II Xeon™ processors and Windows NT® Server 4.0

Windows NT is a registered trademark of Microsoft Corporation. Intel and the Intel Inside logo and Pentium are registered trademarks. Pentium II Xeon processor is a trademark of Intel Corporation. ©1998 Hewlett-Packard Company

Windows NT = hp

not only comes with HP's world-renowned reliability and 99.9% availability, but also includes a generous helping of Intel know-how. Hungry for more information? Visit www.hp.com/go/netserver.

 HEWLETT
PACKARD

Notes update to introduce browser feel

► *Different look, capabilities designed for new users*

By Roberta Fusaro

LONGTIME LOTUS NOTES users and developers are in for a shock — and additional training — when they see Version 5.0,

which ditches the familiar desktop icons and workspace. The good news is that the new interface is similar to a Web browser, which should make it easier for newcomers to learn Lotus Notes.

Lotus Development Corp.'s decision to adopt a browser design for Notes 5.0 wasn't an accident: More than 29 million people know how to use Notes, but hundreds of millions know how to use a browser, Lotus officials said. A beta version of Notes 5.0 has been out for a few

weeks; the commercial release is due by year's end. Version 5.0 will have real-time messaging and new search capabilities built in. Notes' familiar icon-based workspace will be replaced with an opening page that looks more like a Web page — including a navigator bar, a series of bookmark folders and forward, backward and refresh buttons. End users will, however, have the option of reverting to the old workspace.

Nina Burns, president and CEO of Creative Networks Inc., a consultancy in Palo Alto, Calif., said the installed base of Notes users upgrading to 5.0 will

Look what happened when Lexmark got a clearer picture of their business.

Recently, Lexmark International, a leading provider of printing solutions, made a decision that made everyone a lot happier. They decided to integrate every stage of their supply chain to assure customers consistent, on-time product delivery.

The solution? Customer focused processes and enterprise software from J.D. Edwards. Says Dr. Paul J. Curlander, President and Chief Executive Officer, "Keeping promises

and delivering the best solutions is what Lexmark is about. J.D. Edwards is about the same thing. Every contact we had with them was with people who were committed to making Lexmark a success."

And that it is. The J.D. Edwards solution is key to helping Lexmark make major improvements in customer responsiveness, paving the way for long-term relationships.

Things keep looking better for Lexmark and its customers. Deliveries have improved three fold. Cycle times have been reduced by over 70%. As Dr. Curlander says, "Because J.D. Edwards is a company that keeps its promises to customers, we're better able to keep ours."

That's how enterprise software ought to be. It can be for you, too. To find out more, call 1-800-727-5333 or visit www.jdedwards.com/customer.

JDEdwards
Enterprise Software

How it ought to be

Dr. Paul J. Curlander
President and Chief Executive Officer
Lexmark International

Training costs per corporate user for Exchange and Notes/Domino

Training segment	Exchange	Notes/Domino
Help desk	\$0.58	\$0.46
Technical support	\$1.40	\$0.71
End user	\$59.28	\$129.08

Base: 243 IT managers

Source: Creative Networks Inc., Palo Alto, Calif.

require a significant amount of retraining because of the real-time messaging and other new functions — but not as much as if the new user interface weren't like a Web browser.

First-time Notes users may need less training with the new version because of the familiar Web interface, she said, "so it's probably a wash."

WHAT EFFECT?

Corporate information technology executives seem concerned about the effect on their employees. "We have beta copies of Notes 5.0, but I just hope it doesn't get too complicated. We have some part-time developers, and I don't want to see them get overwhelmed," said Steve Eldenschenk, a Notes administrator and developer at American Family Insurance Group in Madison, Wis.

But from a Web application development side, the user interface will make Notes more fun, he said. The retraining will be significant for the hundreds of Web developers at KeyCorp, said Charlie Loughheed, an intranet/Internet Web developer at Key Services Corp., the bank's IT arm in Cleveland.

That's because Notes has a revised management console, among other features.

Developers who are familiar with current versions of Notes and Domino will have to retool a bit, Loughheed acknowledged. But, ultimately, the simpler interface will make it easier for a new developer to adapt to the system and start coding immediately, he said. □

"I just hope [Notes 5.0] doesn't get too complicated," said American Family Insurance's Steve Eldenschenk

Instant access to the best minds in the business,
and you get all the credit.

¹ develop

³ faster

² answers

⁴ subscribe

⁵ ITKnowledge

Get immediate access to thousands of pages of reference material on the technologies you need most. ¹ Develop intense applications using exclusive online pre-releases of major technical books. Click-search and you get real working ² answers — even source code that you paste directly into your program. Achieve serious status ³ faster by flying through anything they throw at you. Just by ⁴ subscribing to the most current working knowledge in the business, ⁵ EarthWeb's ITKnowledgeSM.

Get your 2-week FREE trial* today at www.cw22.itksub.com
Do it before December 31, 1998 and get the introductory rate of only \$95
(save \$200 off the regular price).

*Browse table of contents and chapter 1 of all books free of charge. Further access requires credit card information, however fee will not be processed until the free trial period expires. Cancel up to 24 hours before billing date. Corporate volume discounts are available.
©1998 EarthWeb Inc. All rights reserved. EarthWeb's ITKnowledge is a service mark of EarthWeb, Inc. EarthWeb and the EarthWeb logo are registered trademarks of EarthWeb Inc.



EARTHWEB

Go further faster

Unicent Is The Smar Manage An

After years of struggling to manage distributed networks, network managers are replacing their hodgepodge of various tools and piecemeal solutions with a single, integrated network management solution.

One that can manage the entire enterprise and all your networks, including TCP/IP, DECnet, IPX/SPX and SNA.

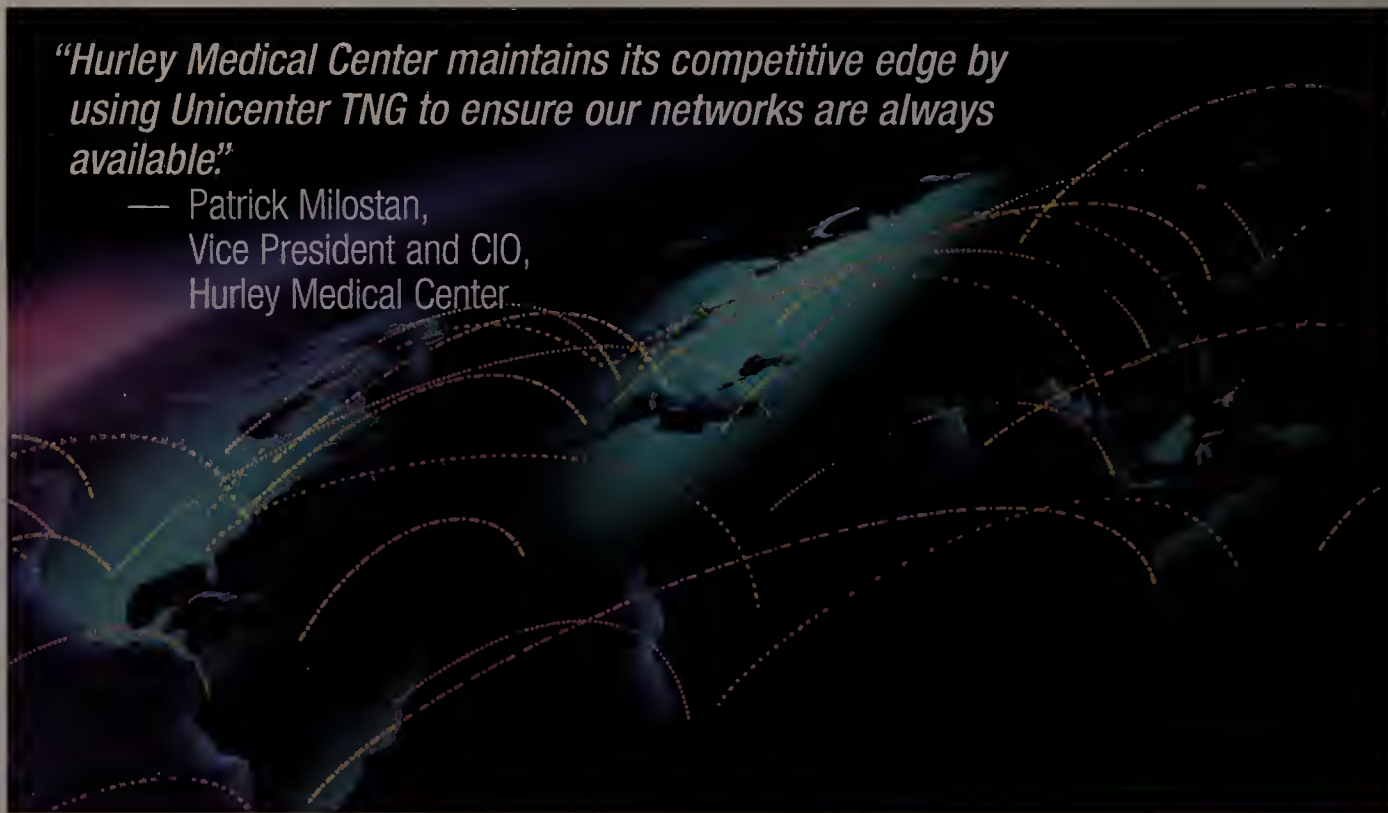
Only Unicenter TNG Offers End-To-End Management.

Unicenter® TNG™ offers automatic, intelligent, object-oriented network management that enables you to manage proactively. So you can anticipate and solve problems before they happen.

Unicenter TNG gives you a single point

"Hurley Medical Center maintains its competitive edge by using Unicenter TNG to ensure our networks are always available."

— Patrick Milostan,
Vice President and CIO,
Hurley Medical Center



of control for your complex and heterogeneous global network. Its dynamic auto-discovery ensures that your network configuration is current. The Real World Interface™ allows for

better visualization of your network. And third-party tools such as element managers integrate with Unicenter TNG through its open and extensible architecture.



er TNG test Way To y Network.

Unicenter TNG Is The Industry Standard For Enterprise Management.

Unicenter TNG is an integrated solution for end-to-end enterprise management. With support for every major hardware platform and operating system, Unicenter TNG is open, scalable, extensible and always vendor-neutral.



The Real World Interface uses virtual reality to create a 3-D environment that represents objects just as they appear in the real world.

The Best Feature Of All: Unicenter TNG Is Shipping Today.

Enterprise Functionality

- ▲ Security Management
- ▲ Network Management
- ▲ Event/Status/Exception Management
- ▲ Database Management
- ▲ Software Delivery
- ▲ Auto-Discovery
- ▲ Workload Management
- ▲ Storage Management
- ▲ Performance and Accounting
- ▲ Output Management
- ▲ Service/Help Desk
- ▲ Change and Configuration Management
- ▲ Inventory and Asset Management
- ▲ Application Management
- ▲ User-Built Agents
- ▲ Virus Protection

Unicenter is a proven software solution that's available today. It's real, mission-critical and

up and **Unicentered** running in thousands of sites around the world for some of the smartest users in the world. Users who know that working smarter always beats working harder.



For More Information Call
1-888-864-2368
Or Visit www.cai.com

**COMPUTER[®]
ASSOCIATES**
Software superior by design.

Unicenter[®] TNG[™]

ERP screens drive workers nuts

CONTINUED FROM PAGE 1

The order-entry delays forced Hydro Agri to throw more manpower into its Canadian stores to handle the spring-planting business rush. Even information technology staffers overseeing the R/3 rollout were pressed into taking orders, Hafer said.

At least 10 other buyers of ERP applications said their end users also have wrestled with the demands of R/3 and rival packages, which are much less

said Hafer and other executives involved in ERP projects.

For example, Sault Ste. Marie, Ontario-based Algoma Steel Inc. started to use PeopleSoft Inc.'s human resources software in August. But personnel managers still often go to the steelmaker's old mainframe application to get the data they need, according to project manager Gary Disano.

"They're having a hard time

order-entry times spawned by R/3 "basically threatened to be a showstopper for us," Hafer said. The fertilizer maker put off installing R/3 at its U.S. retail outlets and began to look at writing a custom order-entry application or buying third-party software.

Hafer said he hopes the problems will be solved by an upgrade to the new R/3 4.0, which he said appears to be more flexible about moving data fields to a single screen.

But Hydro Agri also ran into complexity problems with R/3 in its warehouses. SAP's user interface was confusing to loading-dock workers who enter the quantity of chemicals coming in or going out, Hafer said. So the company is rolling out a simplified, homegrown application that shields the users from R/3.

Those executives and others said the promised benefits of ERP — such as year 2000 compliance, corporatewide integration and better tracking of key business data — make the pain of both installing the software and getting users up to speed on it more bearable.

And ERP vendors aren't ignoring the usability complaints. For example, PeopleSoft and Baan have made their user interfaces much easier to customize, analysts said. Oracle designed an all-new user interface for the sales and marketing applications it shipped this year. And SAP recently vowed to jazz up R/3 and make it more user-

PREPARING THE MASSES FOR ERP

Tips from ERP buyers and analysts on preparing end users for the software:

- **Expect to spend 10% or more of your total project budget on end-user training**
- **Training may have to begin four months or more before you go live**
- **Start with general classes on the way ERP works, not job-specific training**
- **Trainers must be versed in business processes as well as the technology**
- **End users may need three to six months of actual usage to become proficient**
- **Be willing to change employee productivity measurements to fit the software**



Hydro Agri wrote an application to shield loading-dock workers, such as Pete Winkler, from the complexity of R/3

tailored to individual business needs than the homegrown software that usually came before them.

As in Hydro Agri's case, that can force workers to hunt through multiple screens for data fields that they once found in one place. Many companies also change their business processes to better fit ERP applications, compelling users to learn a new way of doing their jobs at the same time they're trying to master the software.

That one-two punch can have "a permanent negative impact on some parts of a company," said David Dobrin, an analyst at Benchmarking Partners Inc. in Cambridge, Mass.

Until recently, many companies worried more about the complexity of installing ERP applications. But ease-of-use problems are gaining a higher profile as more projects go live and as vendors try to broaden their reach to occasional users, such as business managers and salespeople.

For end users on the ERP firing line, it can take as many as six months of live use to get comfortable with the software,

teething on PeopleSoft," he said. Workers have to contend with a dozen PeopleSoft screens compared with just two or three on the old system, which remains online while Algoma works on an installation of PeopleSoft's payroll module.

After A-dec Inc. installed Baan Co.'s financial and manufacturing applications last year, calls to its help desk shot 64% higher than a 1,500-company average. More than half the calls were related to the Baan software, A-dec CIO Keith Bearden said. "That tells you right there that it's not an intuitive application," he said. And Baan isn't the only one, said Bearden, who also has worked with R/3 and Oracle Corp.'s applications.

A-dec, a dental equipment maker in Newberg, Ore., later discovered the Baan system was still counting product inventories that had been shipped to customers. Warehouse employees had entered the necessary inventory transfer data, Bearden said, but they had to go to another Baan screen to confirm the transaction — and the software didn't prompt them.

At Hydro Agri, the increased

friendly [CW, Sept. 21].

But erasing the sins of the past won't happen overnight, said Jim Shepherd, an analyst at AMR Research Inc. in Cambridge, Mass. ERP vendors typically have "designed from the database out, not the user interface in," he said. "The screens have been the last part of the whole process."

"The developers of these packages, without exception, approach things from a system point of view, not a user point of view," said Eric Schaffer, president of Human Factors International Inc. The Fairfield, Iowa, firm does consulting on user-interface design.

That forces users into productivity-sapping screen clicking and "window thrashing" that requires them to constantly switch from keyboard to mouse, Schaffer said. "The software drives people back and forth and back and forth, and it's driving them nuts."

In many cases, ERP projects are automating parts of a company that have never seen a PC or even a dumb terminal.

"A fully integrated ERP system is not easy to learn," said Steve Hunt, R/3 project manager at Purina Mills Inc. in St. Louis. "And we have more people entering data than ever before. We're taking folks who have recorded some information on pieces of paper and putting them on PCs."

At Cincinnati-based Procter & Gamble Co., one of the biggest users of R/3, better productivity in jobs such as order entry and receipt of raw materials isn't a primary goal, said Jack Leone, director of communications, organizational change and training for its global SAP rollout.

The real benefits are for business planners, materials managers and other users "farther down the line," Leone said. "Front-end data entry requires more effort now." □

Surveys show a training surprise

Many companies aren't fully prepared for the training regimen ERP software requires, according to a pair of recent surveys.

Of 150 sites interviewed this year by Benchmarking Partners Inc. in Cambridge, Mass., 43% listed the amount of training needed as the biggest surprise they encountered.

And 17 of 50 companies told Forrester Research Inc. in Cambridge, Mass., that training and other ERP deployment costs were 10% or more over budget (see chart).

"Training is the piece that come back to haunt companies," said Tom Gormley, an analyst at Forrester.

Purina Mills Inc., which is installing SAP R/3 at 56 animal feed plants, starts to train users

four months in advance and has them spend up to 25% of their work time learning the software, said Steve Hunt, R/3 project manager at the St. Louis-based company.

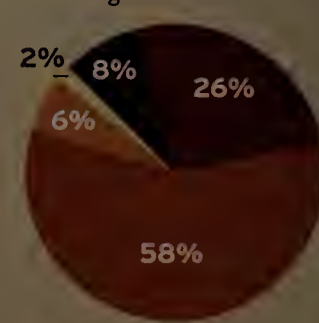
A group of finance workers at one plant spent seven hours per day in training during the final month, with managers putting in extra hours to cover for them and noncritical work being put off until later.

Even so, getting used to R/3 can take another three months of actual use, Hunt said.

"It's not easy to switch [to R/3] from a 30-year-old mainframe system with a customized front end that has just one screen for entering data. People think you're making them do more work."

— Craig Stedman

How close was the cost of user training and other ERP deployment expenses to your original estimate?



- More than 50% above expectations
- 10% to 50% above expectations
- Within 10% of expectations
- More than 10% below expectations
- Don't know

Base: 50 large U.S.-based companies surveyed in August
Source: Forrester Research Inc., Cambridge, Mass.

On one hand, your server operating system is about keeping the network up and running.

There is, however, the other hand.

Microsoft® Windows NT® Server 4.0 runs both your network and your business applications. This is an important distinction.

It means you won't spend your days figuring out how to cobble together business solutions, because more parts of your network will be tightly integrated. It means your network can do more now, do it more efficiently, and give you fewer headaches over what the future holds. It means Windows NT Server is a true multipurpose server operating system.

It all starts with great file and print. (In fact, Windows NT Server 4.0 is a 25% faster file server than NetWare 5.) Then, when you're ready, it lets you take advantage of the latest network functions.

What this really means for you is a solid foundation, and the freedom to grow into whatever you need down the line.



From high-tech visas to year 2000, Congress acts

► Key bills protect Net copyrights, boost high-tech visas, curb Internet taxes and fix Y2K bugs

By Nancy Weil
BOSTON

IT WAS A BUSY U.S. congressional session for technology legislation, as lawmakers recently approved key bills covering protection of digital copyrights, content filtering, a ban on Internet taxes and a boost in the number of high-tech visas.

The bills will become law 30 days after being signed by President Clinton. Several technology-related proposals were tacked on to the huge federal budget bill. They were approved just before the legislative session ended and were signed by Clinton last week.

The omnibus spending bill includes \$3.4 billion in emergency funds to "fix" the year 2000 bug in government computer systems.

In the waning hours of the legislative session, several lawmakers predicted that technology-related debates and bills will play a bigger role next year.

Among the laws that will take effect by year's end are the following:

■ **The American Competitiveness Act** will temporarily increase the number of H-1B visas allowed for foreign workers in technology. For the next two years, 115,000 such visas will be permitted instead of the 65,000 that formerly had been allowed. The number of H-1B visas will drop to 107,500 in 2001 and to 65,000 in 2002.

The act was controversial because some opponents argued that the shortage of high-tech workers has been manufactured by companies that lay off older employees or employees who need more training rather than teach them new skills.

Clinton threatened to veto any legislation that didn't include more emphasis on training U.S. workers. The compromise bill requires that \$500 be paid per visa petition, or for a visa renewal. That will raise an estimated \$75 million for job training and college scholarships for low-income students in math, computer sci-

ences and engineering.

The impending law also provides layoff protection for U.S. workers. Companies whose workforces consist of 15% or more non-U.S. employees must pledge not to lay off an American worker and fill the opening with a foreign employee. Such companies also may not recruit less qualified foreign workers.

■ **The Digital Millennium Copyright Act** implements World Intellectual Property Organization (WIPO) treaties related to copyrights of digitally transmitted and stored material.

The act was another highly controversial measure that required years to finally win approval, following months of debate and negotiation before a compromise was reached.

Critics contend that the act goes far beyond the intent of WIPO by making it a criminal offense to circumvent copyright protection measures. It also forbids the manufacture, import, distribution or sale of devices or services for circumvention. Protection measures include encryption.

Numerous civil liberties and industry groups also protested the act because of privacy concerns and issues related to obtaining information electronically



More information about the recently ended congressional session can be obtained at the Web sites for the U.S. House of Representatives, www.house.gov/, and the U.S. Senate, www.senate.gov/. The Web site for the White House and President Clinton can be found at www.whitehouse.gov/.

ly at libraries and through research institutions such as universities.

Objectionable material related to databases was removed from the compromise legislation, which also provides exemptions from criminal penalties for those who research and develop security measures.

■ **The year 2000 bug** figured prominently in this legislative session. The spending bill includes \$3.4 billion in emergency funds to "fix" government computer systems.

Congress also passed the Year 2000 Information and Readiness Disclosure Act, which en-

courages companies to share information about year 2000 preparations by freeing them from liability over statements made about products or other aspects of company plans to fix their software or systems. The act is viewed by some users and observers as a big loophole for vendors — one that might leave users with little recourse if products don't work properly [CW, Oct. 26].

■ **The Internet Tax Freedom Act** prohibits new Internet taxes for three years. Also part of the budget legislation, the act calls for a commission to review options for taxing online commerce. States that have existing taxes may continue to levy them but aren't allowed to implement new Internet taxes. The act was proposed both as a means to push electronic commerce and because the U.S. has thousands of state and local taxing bodies, making it difficult to determine which should apply to online transactions.

■ **The Child Online Protection Act** already has elicited a court challenge from civil liberties groups and others who contend that the measure violates free-speech rights. The act prohibits dissemination via the Internet of commercial material

deemed "harmful to minors."

Civil liberties groups and other plaintiffs, including bookstores, have filed a court challenge in federal court in Philadelphia. U.S. Attorney General Janet Reno was named as the defendant because of her role as the nation's top lawyer. The Reno-led U.S. Department of Justice has expressed concern about the constitutionality of the act, which also has become called the Communications Decency Act II. Portions of that act similar to the prohibitions in the Child Online Protection Act were ruled unconstitutional two years ago by the U.S. Supreme Court.

■ **The Paperwork Elimination Act** was another aspect of the budget bill. The act establishes preliminary guidelines for the federal government's use of electronic signatures for forms submitted via the Internet. The measure also includes privacy provisions intended to protect the personal information of electronic signature systems users. The act requires the U.S. Office of Management and Budget to establish policies for electronic submissions using electronic signatures within 18 months. □

Weil writes for the IDG News Service's Boston bureau.

Lotus links Domino to business planning packs

► Moves to connect server to Oracle, PeopleSoft; SAP already set

By Roberta Fusaro

TO HELP COMPANIES build a bridge between employees and isolated ERP data, Lotus Development Corp. last week announced Domino server connectors to Oracle Corp. and PeopleSoft Inc. enterprise resource planning (ERP) applications.

The announcement extends Lotus' ERP strategy, company officials said, so that Domino now connects to more than half the ERP applications on the market.

Lotus earlier this year announced Domino Enterprise Connection Services — its ERP integration technology — and links to SAP AG, Lawson Software Inc. and Infinium Software Inc. applications.

The goal is for users to leverage their ERP investments with

Domino now connects to more than half the ERP applications on the market.

an application server that provides directory services, security and workflow capabilities.

For instance, Evelyn Franklin, a manager of information technology and human resources re-engineering at Metropolitan Life Insurance Co. (MetLife) in New York, said her company is rolling out PeopleSoft human resources applications to streamline that department and is already linking the applications to Domino to create some

employee self-service applications.

Last year, in a pilot program, MetLife let a small group of employees enroll in its health benefits program via a Notes front end linked to a PeopleSoft database. This year, the company is letting the whole company do the same thing through the Web using a Domino interface, Franklin said.

The link to Domino is key, Franklin said, because PeopleSoft 6.0 alone doesn't have Web capabilities — later versions do, but the company hasn't upgraded yet.

Franklin said the company will consider using the Domino Connector for PeopleSoft, when it ships early next year, for future applications such as compensation planning and letting employees update their own data in the PeopleSoft database.

In both cases, the security provided by Domino is important, she said.

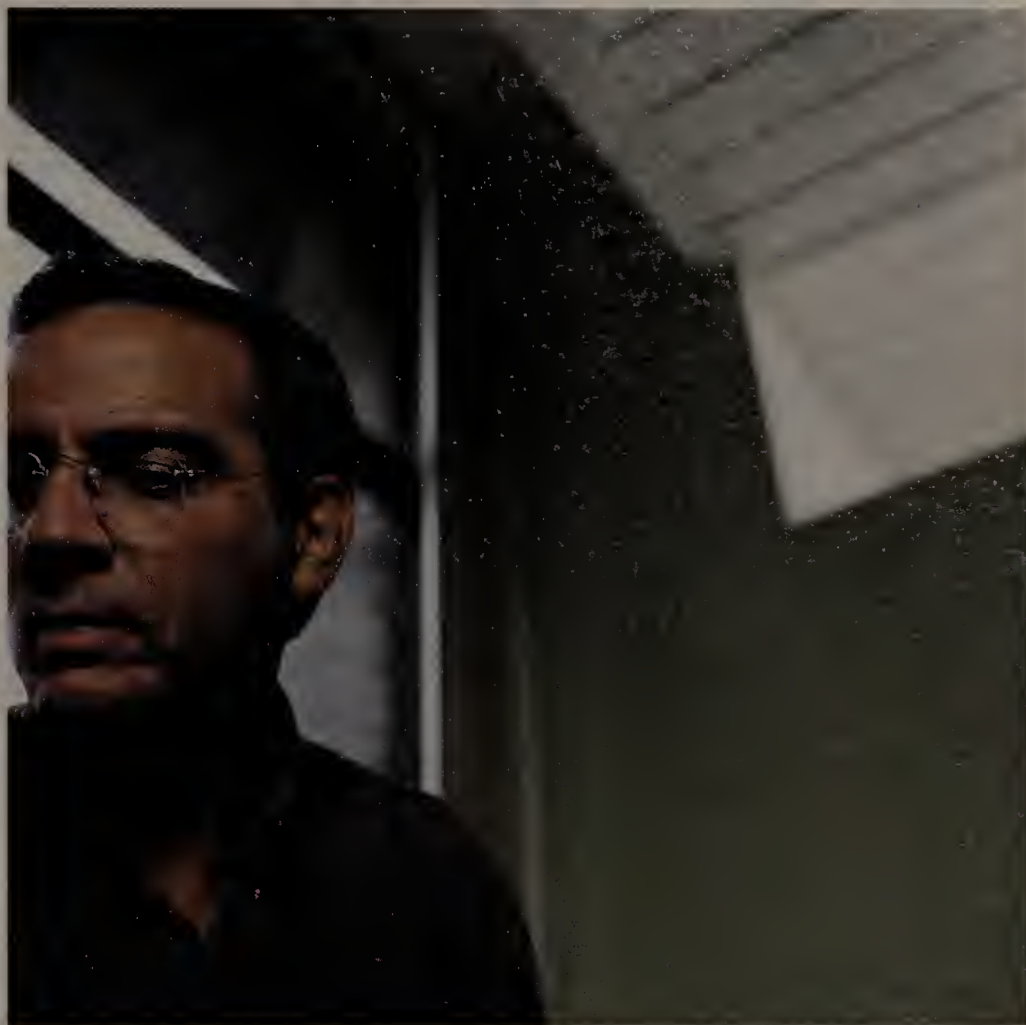
Steven B. Weissman, president of Kinetic Information, a consultancy in Waltham, Mass., said Domino's strengths in workflow, directory services and security will complement ERP applications, but it is unclear how easy it will be to implement the connectors.

Domino Connector for Oracle applications and Domino Connector for PeopleSoft applications will be available in the first quarter next year. Pricing will be available closer to ship time. □

MOREONLINE

For resources and articles related to enterprise resource planning, visit Computerworld.com.

www.computerworld.com/more



When they want the next big thing, how will your network take the news?

Let's say you've got the basics handled, then the CEO decides you need a complete communications solution. From server-based messaging to a Virtual Private Network, your solution will cross the line between your applications platform and your network OS. Microsoft® Windows NT® Server's unique multipurpose design will handle the crossover.

And if someone decides your future is e-commerce, or you simply decide to build an intranet, you won't need an army of coders and system managers to get you there. Why? Because multipurpose means that Web services, application services, security and management are integrated—they all work together.

So, when you choose Windows NT Server, you prepare yourself for the changing needs of today's networks.

QUICK COMPUTERWORLD STUDY

HOT TRENDS & TECHNOLOGIES IN BRIEF

Check out www.computerworld.com/more for more resources, *Computerworld* articles and links.

THE MAP TO IMAP

- **1986** – IMAP conceived at Stanford University.
- **1987** – IMAP2 defined. Client and server updated. Implemented on Unix server.
- **1988** – First IMAP request for comments published in July.
- **1989** – Mark Crispin, original IMAP author, hired by the University of Washington.
- **1990** – Revised IMAP2 request for comments published in August.
- **1991** – Support for Multipurpose Internet Mail Extensions added to the protocol. Allows non-ASCII files to be transferred over the Internet. This addition forms the basis for IMAP2 beta.
- **1992** – IMAP2 beta server deployed by the University of Washington.
- **1993** – Internet Engineering Task Force's IMAP working group forms. IMAP implemented on VMS server, a Digital mainframe operating system.
- **1994** – IMAP4 request for comments published. IMAP4 approved as proposed Internet standard.
- **1995** – First IMAP4 server released by Carnegie Mellon University.
- **1996** – University of Washington hosts first and second IMAP meetings. Sun, Netscape and other vendors declare support for IMAP4.
- **1997** – Continued clarifications to IMAP4.1 specification. Release of two IMAP clients – Netscape Messenger and Microsoft Outlook Express – that are integrated with two popular Web browsers: Netscape Communicator and Microsoft Internet Explorer, respectively.

Source: The IMAP Connection at the University of Washington

IMAP

DEFINITION: The Internet Message Access Protocol (IMAP) provides a series of commands that the mail client software and server use to trade information. It's a method for end users to access their E-mail or bulletin board messages from a corporate mail server. It lets a client E-mail program – such as Netscape Mail, Qualcomm's Eudora, Lotus Notes or Microsoft Outlook – pull remote messages from a server as easily as if they were stored on a local hard drive.

E-mail standard gains steam thanks to remote-access abilities

By Roberta Fusaro

THE INTERNET Message Access Protocol (IMAP) is a mechanism for getting information about your E-mail, or the messages themselves, from a corporate mail server.

This E-mail protocol lets users dial in to an Internet server from a remote location and review the headings and senders of their E-mail before choosing to download that mail from the server.

With IMAP, users access messages as though they were stored locally, when in fact that E-mail may be manipulated on a server miles away.

Because it has that remote capability, IMAP is most likely to be adopted by corporate users who see roaming features as important, says Paul Hoffman, director of the Santa Cruz, Calif.-based Internet Mail Consortium, an industry group made up of vendors and users.

ACCESS IS KEY

"Roaming users want to leave their messages, mostly, on the server. They want to be able to go to someone else's terminal and read mail and have access to older messages," Hoffman says. IMAP lets them do that.

IMAP is different from another E-mail access protocol, Post Office Protocol (POP), which stores all messages on a server. Users dial in to the server, and POP plops the

messages into their in-box. It then deletes that mail from the server.

Both protocols have been around for more than 10 years.

Ron Rassner, an analyst at Creative Networks Inc. in Palo Alto, Calif., says the main difference between POP (currently in Version 3.0) and IMAP (currently in Version 4.0) is that POP3 offers users little control over their messages.

IMAP gives users an intelligent E-mail store from which to review messages before downloading them — that includes choosing whether to download file attachments. Users can apply mail filters and search agents on the server. And messages can be picked up from any machine, anywhere, Rassner says.

But vendors have interpreted the ambiguous IMAP4 specification in different ways, which has led to inconsistencies among mail clients and servers, Rassner says. For example, users may not be able to read an attachment in a Netscape Mail file in the Eudora Pro E-mail program.

But Rassner anticipates IMAP will gain steam in the next few years — a sort of inevitability as the protocol evolves. And those incompatibilities among vendors will be ironed out, he says.

"POP3 will never go away, but we might see multiserver capabilities coming our way that can handle both," Rassner says. □

AT ISSUE

Remote-access tool needs consistent specs

SIGNED, SEALED AND DELIVERED

Users can access E-mail in off-line, online and disconnected modes

Off-line mode

E-mail software client pulls messages from a server to the machine where the mail client is running, then deletes the messages from the server.

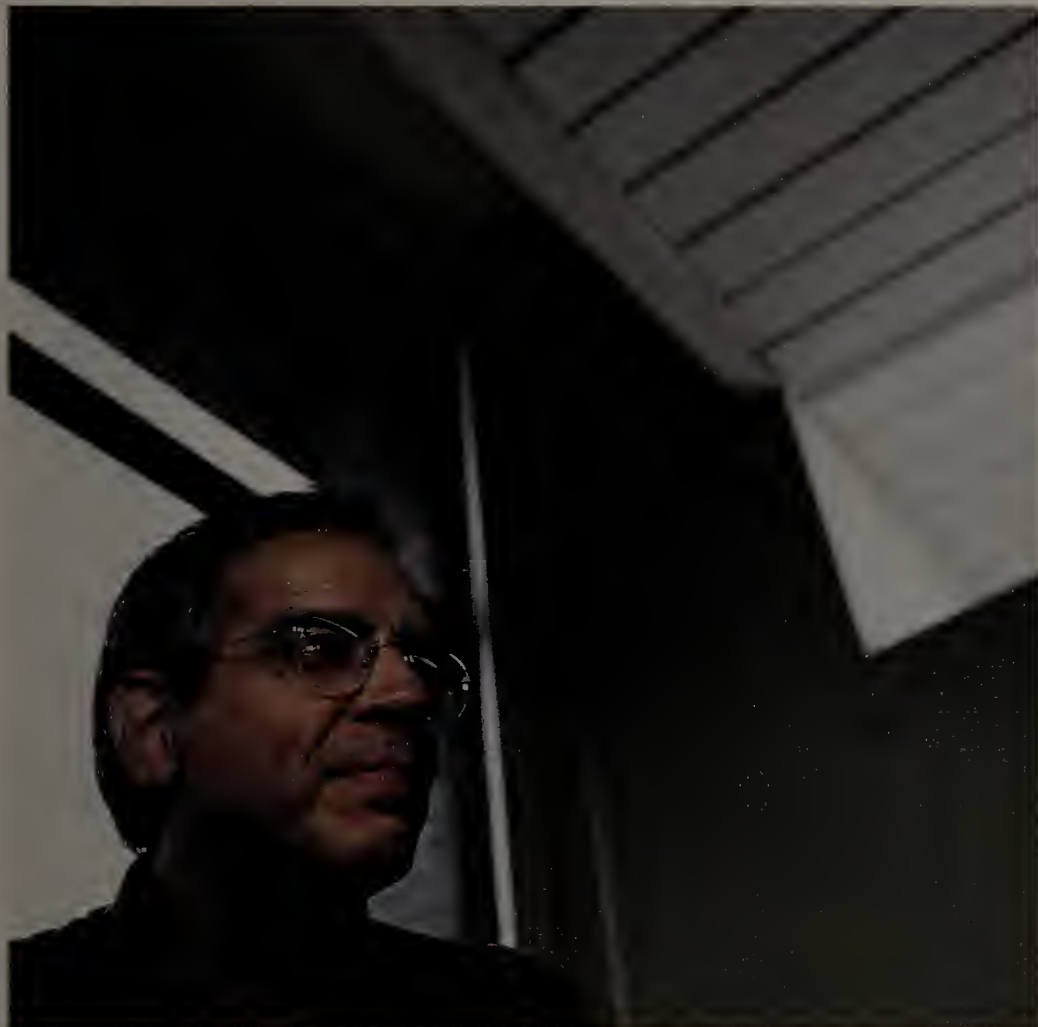
Online mode

The message remains on the server and can be manipulated at the server with client software.

Disconnected mode

The message remains on the server. E-mail software copies select messages and disconnects from the server, to synchronize with the server later.

■ Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefanie McCann at stefanie_mccann@cw.com



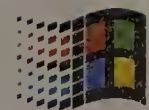
And what about tomorrow's network? Or tomorrow's Windows NT Server?

Chances are you won't immediately use every whistle and bell we've included in Microsoft® Windows NT® Server 4.0. These features will, however, be there when you need them tomorrow, and won't get in the way of network performance today.

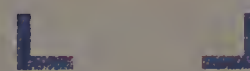
With future versions of Windows NT Server, similar logic applies. In the same way that having a multipurpose OS lets you adapt to new solutions, Windows NT Server also gives you the flexibility to easily upgrade when you are ready.

Windows NT Server 4.0 lets you do what's right for today, and lets you prepare for the challenges ahead.

As you take the time to make the right server OS decision, you may want more detailed information. We've assembled some new resources for you at the Web address below.



Windows NT®
Server 4.0



www.microsoft.com/go/WindowsNTServer/

Microsoft®

Where do you want to go today?®

©1998 Microsoft Corporation. All rights reserved. Microsoft, Windows, the Windows logo, Windows NT and Where do you want to go today? are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Other product and company names mentioned herein may be the trademarks of their respective owners. File server speed data from 1998 Mindcraft, Inc. study.

REDUNDANCY IS BUILT IN.

REDUNDANCY IS BUILT IN.

REDUNDANCY IS BUILT IN.

REDUNDANCY IS BUILT IN.

REDUNDANCY IS BUILT IN.

REDUNDANCY IS BUILT IN.



**Introducing the Dell® PowerVault™
Fibre Channel Storage Products**

Windows NT® 4.0 support

Dual active storage processors

Up to 1GB of mirrored cache

Up to 1TB of fibre channel storage

Up to 120 fibre channel hard drives

Redundant hot-plug power supplies

and cooling fans



When it comes to your data center, we'll say it again:
You can't be too careful.

Which is exactly why you want to take a closer
look at our new PowerVault Fibre Channel Storage
Products. And then you'll want to take a look again.

From the floor up, this high-performance storage
system is designed to reduce the possibility of any
single point of failure in key components.

Redundant data protection is built in through
dual active storage processors (RAID controllers).
Redundant power supplies are built in. Redundant
hot-plug fans are built in. Redundant fibre
connections to all disks are built in. We even
designed in mirrored cache.

Our engineers went over potential areas of failure
twice. Then they went over them twice again.

And just because we were obsessive about
protecting your data, we didn't forget about
performance.

Our new PowerVault Storage Systems offer an
end-to-end fibre channel solution capable of
delivering up to 18,000 I/Os per second. They hold
up to a full terabyte per rack. You can easily
combine multiple PowerVault racks together to
satisfy whatever high-speed, high-availability storage
and access needs you may have.

And like our high-performance Dell PowerEdge®
servers, they're available to you at a great price.

So call 1-888-887-DELL and ask for our data
center server account team. Or is that redundant?

BE DIRECT™ **DELL®**
www.dell.com/reliable

These products are FCC-A verified for commercial usage and are not offered for sale /lease in home or home office.

For a complete copy of limited warranties, write Dell USA L.P., 1 Dell Way, Round Rock, TX 78682, Attn: Warranties. Dell, the Dell logo and PowerEdge are registered trademarks and Be Direct and PowerVault are trademarks of Dell Computer Corporation. Windows NT is a registered trademark of Microsoft Corporation. ©1998 Dell Computer Corporation. All rights reserved.

O P I N I O N

Mobile relief The last bastion of PC absurdity — the portable computer — may be about to take a tumble. Good thing, too.

You haul a clumsy, expensive, trouble-prone portable to all corners of the Earth just so you can get a little work done on the road. You suffer lower-back pain and wear creases into your shoulder. And if that machine — which doubles as your desktop computer back at the office — gets stolen, your company secrets are on the hook.

Sound familiar?

I feel your pain. But a couple of weeks ago, I saw relief in the form of Hewlett-Packard's nifty little Jornada portable. It's one of the first of the so-called Jupiter machines based on the Windows CE operating system. I suspect many imitators will follow.

The Jornada weighs a little more than 2 pounds



and is the size of a large paperback. It has a keyboard on which you can touch-type, an internal modem, a readable color screen and a PC Card slot. HP says the batteries last 10 hours (a claim I couldn't

prove), and it lists for \$999. There's no boot-up time. There's also no hard disk, but you can stoke it with 64M bytes of flash memory.

For my money, that's the way mobile computing will go. Eighty percent of business travelers do the same four things on their laptops: E-mail, word processing, spreadsheets and presentations. And there's absolutely no reason they need a small mainframe to do that. Jornada and other Jupiter-class machines are the first to be designed from the ground up as mobile Windows machines, not as slimmed-down desktops. They're not as powerful as full-blown laptops, but they'll do most of what you need.

It will be interesting to see how hard computer makers push Jupiter machines. That market is likely to grow at the expense of laptops, which are the last refuge of high margins in the PC industry. PC makers may not push those low-cost beauties aggressively, but it's in your best interests to check them out.

With a machine like that, you might be able to leave important data in the office and take only what you really need on the road. Now that's progress!

Paul Gillin, editor in chief
Internet: paul_gillin@cw.com



L E T T E R S

Salary survey: Enough is enough . . . or is it?

I HONESTLY FIND it amazing that *Computerworld* has devoted months and months to countless articles regarding how IT careers and opportunities are skyrocketing, and then, in the course of one week, does a quicker turnaround than Bill Clinton by announcing that this phenomenon is over ["Enough is enough: *Computerworld's* 12th Annual Salary Survey," CW, Sept. 7].

It's understandable that producing a weekly IT magazine with credible articles on a consistent basis is difficult, to say the least, but how about giving the readers a little credit with a bit more longevity on your views?

James R. McDonald
Amerada Hess Corp.
Woodbridge, N.J.
mcdonald@aesop.rutgers.edu

the quotes were quite revealing. For example, "I only have one trained person taking care of all of our networking, and his skills are certainly in high demand," Martin says. "But he wants to stay in this area, and we are taking advantage of that. He's probably making at least 20% below market value for his skills."

Am I the only one who is outraged by this? Am I the only one who considers this to be immoral?

Am I the only one who is outraged by this? Am I the only one who considers this to be immoral? "We are taking advantage of that." No, they are taking advantage of him.

I've worked for a company like Martin's. Never again.

Mark van der Hoek
Hemet, Calif.
captainhoek@koan.com

THANKS FOR THE article on IS salaries [CW, Sept. 7]. Some of

Firewall review took only useful approach to security

AS SOMEONE who has worked in information security for over 20 years, I'd like to congratulate *Computerworld* for the most effective and realistic firewall review article I have yet to see ["Firewalls stand the heat," CW, Sept. 7].

Gary Anthes' article took the only approach that is useful for investigating the security provided by any product: Have experienced security engineers try to penetrate it. After all, that is what will happen as soon as the firewall goes online for a business. Except the attackers in the real world will be much less

likely to let you know the results.

It is telling that the International Computer Security Association did not want to participate. There is a built-in conflict of interest for a vendor-funded organization to point out flaws in its members' products. A realistic expert-driven test — such as the one *Computerworld* employed — provides much more useful information for the consumer than a checklist-based certification program.

John Pescatore
Silver Spring, Md.
johnp@entrust.com

Is peccadillo of either Bill relevant to CW readers?

WHEN I READ the article by David Moschella ["Two Bills on the hot seat," CW, Sept. 14], my feelings quickly turned to disappointment. This article is on the level of *The Star*, *National Enquirer*, etc.

Even if President Clinton is guilty of what he is charged with, and even if Microsoft Chairman Bill Gates is guilty of some nefarious crime, to equate the two behaviors as being the same is ludicrous.

One is an alleged personal transgression, which is pertinent only to Clinton and his family. The other is an alleged improper business practice, which, although overly aggressive, has not been proved illegal.

If either is convicted of any violation of the law, then and only then will either become pertinent to us.

At that time, the Gates part of this equation will be the only one that should be published in this publication.

Michael C. Kemp
Reseda, Calif.
balstic@earthlink.net

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, *Computerworld*, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Get inside

DO IT NOW

and save over **80%** off
the single copy price.



COMPUTERWORLD

☒ 51 issues for ~~\$48.00~~ **\$39.95**

First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew *U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295. Foreign orders must be prepaid in U.S. dollars. Single copy price: \$4.00/issue

Call us toll-free at: **800-552-4431** Fax your order to: **(740)382-1058** E-mail: **circulation@cw.com**

Outside U.S.: (740) 382-3322

B4L8 P

Get inside

DO IT NOW

and save over **80%** off
the single copy price.



COMPUTERWORLD

☒ 51 issues for ~~\$48.00~~ **\$39.95**

First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew *U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295. Foreign orders must be prepaid in U.S. dollars. Single copy price: \$4.00/issue

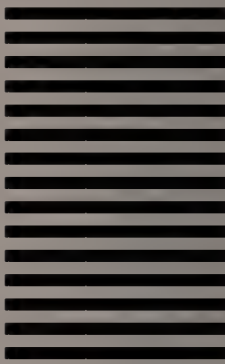
Call us toll-free at: **800-552-4431** Fax your order to: **(740)382-1058** E-mail: **circulation@cw.com**

Outside U.S.: (740) 382-3322

B4L8 P



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

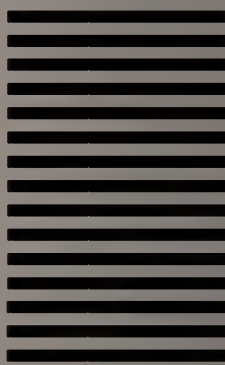
POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



E-commerce? E-business? Who E-cares?

Walid Mougayar

Anyone who has finished implementing electronic commerce on the Internet, please step forward. You can now move on to electronic business.

Not so fast, please.

In a nasty little intramural squabble, some analysts and online businesspeople have decided that E-business is infinitely superior as a moniker to E-commerce.

That's misleading and distracts us from the business goals at hand. The effort to separate the E-commerce and E-business concepts appears to have been driven by marketing motives and is dreadfully thin in substance.

Yes, E-commerce already was misused, abused and confused when E-business emerged in 1996 as the new buzzword. But the genesis of that confusion rests with the particular scope and vision one has for E-commerce.

People have been saying "business-to-business electronic commerce" since



The objective is to improve or exploit unique business propositions.

1994 — the year the Internet turned upside down the old meaning of E-commerce. And when you look at those early broad definitions, it's very difficult indeed to see how they differ from the ones given today for E-business.

Here's the important thing: E-commerce, E-business or whatever else you may want to call it is a means to an end. The objectives, as with IT, are to improve or exploit unique business propositions — with the focus now being the online world. Worrying about the definitions of those words, or about which is superior to the other, or about which is a subset of the other, is a silly little inside-the-belt-way argument.

Consider the following fundamental reexaminations: customer satisfaction becomes online customer satisfaction; competitiveness is now online competitiveness; customer loyalty turns into electronic loyalty; revenue translates into online revenue; cost of business is influenced by running the online business; gaining new customers evolves into acquiring new electronic customers; and developing new products changes to information-based products.

That list isn't dependent on how we define E-commerce or E-business — but it's guaranteed to keep any organization busy for the next two to three years.

We are witnessing increased E-commerce or E-business activity inside our companies, and it's manifested by substantial changes to the buying/selling process, relentless efforts to create digital value services and an obsession with intermediary-like business functionality. Those activities are leading to the creation of new types of electronic marketplaces.

So guess what? We need another "E" word. That's right, electronic markets.

E-markets are becoming not only the new battlegrounds for market-share

dominance, but also the new locus for business activity. The opening of and participation and competition in various forms of open E-markets ultimately are the primary goal of E-commerce or E-business, and that goes beyond trying to define either one of them.

The next generation of E-markets will be open, global and based on E-business rules of engagement and interoperation. They include private E-business communities, open digital cooperatives, powerful market makers, electronic trading exchanges and agent-based marketplaces.

Now do you see E-business or E-commerce? Or, rather, do you see several different choices for participation in E-markets?

Attempting to define E-commerce or E-business is guaranteed to generate byzantine debates with meaningless origins. It reminds me of trying to answer the following question: "If one synchronized swimmer drowns, would the others follow?"

Instead, let the question be: "What E-markets are we participating in?" □

Mougayar (walid@cyberm.com) is a management consultant, a lecturer on E-market strategies and author of *Opening Digital Markets*.

Personal IT trainers for the top brass

Michael Schrage

I met a youngish guy who was unbelievably sharp about PC technology and the Web. He seemed smart and articulate about business issues, too. His academic credentials were impeccable. I took him for a webpreneur wanna-be trolling for venture capital.

I was wrong.

Turns out he was the personal technical guru for the chairman and CEO of Gargantuan Technology Inc. Sort of a PC butler-cum-coach. Apparently, the chief executive was a technological ignoramus. Not that you would have heard those words from the mouth of his PC butler; he was the soul of discretion.

Apparently, a savvy CIO had assigned the young hotshot to serve the CEO's every technical need and whim. The assignment was to last a year. After that, he could pretty much go wherever he chose in the organization. Good deal: young hotshot gets terrific exposure, learns a lot. And IT is operationally hardwired directly into the chairman's office. At Gargantuan, the assignment is managed more as professional development

than technical support. The CEO gets a loyal technical sounding board who also can reformat his hard disk. Smart.

At a time when organizations know that help desks do more training than technical support, the notion of IT creatively sucking up to the top cadre of management should have a special appeal. Sure, budgets are tight. Sure, resources are constrained. But doesn't it make political — if not economic — sense to detail a few bright IT minds to the folks who run the profit centers? To all of those managers who complain that IT doesn't know how to align itself with business needs? Offer them their own, personal IT trainers. The goal should be to make business lives easier. And if the hotshots are asked to configure

el jefe's home PC setup ... well, it's a relationships world, no?

Is it risky to assign a ponytailed 28-year-old to be the CEO's personal intranet tour guide three times a week? You bet. Could the 33-year-old LAN manager probably do better things with her time than be on technical call for the 45-year-old newbie general manager at the company's most profitable unit? Maybe.

But I'm still taken aback by how few IT organizations have tried to turn their people into missionary resources.

Although it's undeniably true that typical IT people don't have the same social skills as, say, sales folk, it's equally true that "power users" have skills and insights top managers need on hand. It's like having a transla-



Creatively sucking up to top management should be commonplace.

tor for international visitors. You want that resource on call. And, not incidentally, you want to give people a chance to become more of who they can be.

To be sure, several world-class organizations — Chase Manhattan Bank and GM come to mind — provide PC coaches to bring managers up to speed. That isn't the issue. The challenge here is to see if IT organizations can build intra-corporate alliances based on people rather than technologies. That isn't easy. After all, how many HMO-based doctors make house calls?

Of course, top managers might not play along with this proposal. Maybe they don't want or need their very own nerd. Then again, that very unwillingness would send an important message to IT. My message is simple and blunt: Maybe IT could be more successful with the corporation if it became more successful supporting top managers — not just top management. □

Schrage is a research associate at the MIT Media Lab and author of *No More Teams!* His Internet address is schrage@media.mit.edu.

For long-term
networking solutions, should you
turn to someone with expertise
in data or telephony?

Yes.

Kristin Bond Lichtenauer
Senior Manager
Business Development

NORTTEL
NORTHERN TELECOM

Northern Telecom
8200 Dixie Rd.
Brampton, ON L6T 4B8
1-800-446-7835



Bay Networks

J. Craig Easley
Product Line Manager
Network Management

Bay Networks
4401 Great America Pkwy.
Santa Clara, CA 95052
1-800-822-9638

When it comes to your network, you no longer have to settle for half the equation. With Nortel Networks™, you have a choice that covers the spectrum. From data to telephony, LAN to WAN, we offer a complete breadth of products to help you create a Unified Network. And a global network of business partners trained to assess your needs and deliver solutions which allow your people to share ideas and information anytime, anywhere. Don't settle for anything less. Nortel Networks. www.nortelnetworks.com/3YCM

NORTTEL
NETWORKS™

How the world shares ideas.

Nortel Networks, the Nortel Networks logo, Unified Networks and "How the world shares ideas." are trademarks or registered trademarks of Northern Telecom Limited. Bay Networks is a registered trademark of Bay Networks Inc. ©1998 Northern Telecom. All rights reserved.

Competitive advantage is for the birds

Allan E. Alter

Let's give it up, once and for all. You can't achieve sustained competitive advantage through information technology. But I'm not saying the zillions of articles, speeches, books and papers on the subject should be tossed into a dumpster.

Actually, they ought to be saved until January 2000 and used as fuel if the electricity goes out. That way, we'd get some ROI out of them.

And none too soon, after all the blind alleys we've paved with such fools' gold. Too many so-called IT strategists have chased this chimera, this mirage, this myth.

That's what I say, after talking to the CIOs who've been lionized for doing it. I recently interviewed Charlie Feld, Max Hopper and Mike Heschel — you can see the results in the Forecast issue. Their great, so-called competitive advantage systems at Frito-Lay, American Air-



Objective: Competitive advantage wasn't on the mind of the CIOs lionized for it.

lines and American Hospital Supply, respectively, made business history. They're proud of their accomplishments, but don't like the label.

Hopper, who built the Sabre airline reservation system, said seizing competitive advantage is "not a worthy objective," and sustained advantage through IT isn't possible. And Heschel snorted, "We didn't say, 'Objective: sustainable competitive advantage' " when American Hospital Supply's ASAP or-

dering system was in the works. What's their problem with competitive advantage, when it made them so famous? The problem, they say, is that it puts too much emphasis on technology. It turns IT into a magic bullet. But the world isn't like SAP's insipid old TV commercials, in which software makes your profits soar, your boss smile and your staff dance.

If you don't know how to run a business or understand your customers, you'll end up as another big spender with an alignment problem. Hopper knew that. He sold his Sabre technology to competitors because he knew his edge wasn't technology, but his knowledge of how to run an airline.

Chasing competitive advantage also fosters the illusion you can plan that stuff. It whips up an image of The Best and the Brightest Gathering in a Wood-Paneled Boardroom to Come Up with a Grand Strategy. Yeah, it's good work if you can get it — ask any strategic consultant driving a Mercedes — but that's not how it really happens.

The truth is, those legendary CIOs weren't aiming at competitive advantage.

They aimed at something more simple and down to earth: offering customers a service that makes their lives easier and richer. Or figuring out which business processes were the most important and seeing how technology could help. What matters is execution where it counts. Competitive advantage, in fact, is a lot like happiness: You don't find it by obsessing about it.

The philosopher John Stuart Mill got it right: "Those only are happy who have their minds fixed on some object other than their own happiness; on the happiness of others, on the improvement of mankind, even on some art or pursuit. . . . Aiming thus at something else, they find happiness by the way."

If you're hung up on competitive advantage, wise up. Do something urgently and uncompromisingly right for your customers or operations, then find something else that badly needs doing and do it again. Unless you corner the market in, say, operating systems, that's how to get customers to come back so often that it looks like competitive advantage. □

Alter is Computerworld's department editor, managing. His Internet address is allan_alter@cw.com.

IT not a perfect fit for either political party

David Moschella

Although most of us will not vote, tomorrow is an election day. At least once every two years, it's worth considering where America's main political parties stand on issues of interest to our industry and whether those positions should make us look favorably upon one group or the other.

Actually, that's surprisingly difficult. Although both Democrats and Republicans are constantly saying that information technology will be the major engine of growth in the 21st century, there seems to be little else they agree on — even within each party. Even worse, both sides are guilty of exaggerating their darker messages. Too often, the potentially powerful rhetoric of opportunity gives way to the easy politics of fear and/or resentment. Consider the key concerns of both sides:

■ Although many Democrats support a variety of pro-IT positions, the dominant message is still too often one of resentment. We are being warned constantly that technology is contributing to widen-

ing societal income gaps, that we're heading toward a world of digital haves and have-nots and that IT goes hand-in-hand with globalism — with all its restructuring, offshore manufacturing and other forms of downward wage pressure and job insecurity. Too often, Democrats imply that leaving a student without Internet access is a national tragedy, almost akin to child abuse.

■ Republicans also love to talk about the wonderful opportunities created by technology, but what really gets them excited is fear. Fear of encryption aiding terrorists and organized crime, fear of pornography and gambling, fear of advanced technology falling into the

wrong hands. The supposedly antigovernment party too often acts as if an unrestrained Internet would lead us all into anarchy.

Not surprisingly, many conservatives have a hard time accepting accelerated change.

So many IT industry issues simply refuse to fit nicely within traditional party lines. The H-1B visa issue revealed the traditional split between pro-business Republicans and pro-worker Democrats. But what are the liberal and conservative positions regarding privacy, copyrights, Internet "speech," state and federal commercial codes, digital cash, electronic commerce, spectrum allocation and even the international coordination of the Internet



Computer pros' unusual stances make them difficult to pander to.

itself? Although, ironically, Democrats began the antitrust case against IBM and Republicans ended it, in the Microsoft case the best-known DOJ boosters — such as Robert Bork or even Bob Dole — have been Republicans, with the White House almost eerily silent.

Perhaps because our industry is so heavily concentrated on the East and West coasts, a relatively high percentage of the IT-oriented population is fiscally conservative but socially liberal. Because we don't vote in large, predictable blocs, we're difficult to address, let alone pander to.

The Clinton-Gore team tends to understand and articulate that reality much better than Gingrich and Lott, but even they haven't been able to consistently serve our industry. If industry issues alone decided how most IT workers vote, it would be pretty much a toss-up, meaning the voice of our industry will continue to be muffled. □

Moschella is an author, independent consultant and weekly columnist for Computerworld. His Internet address is dmoschella@earthlink.net.



Is there power in standardization?

Absolutely. When a technology achieves

industry-standardization, the costs and risks of using

technologies—whether for one PC, or an

enterprise—and making them more useful and

Better answers.™



go down, and the number of people who can use it goes up. It's something we've long led the way in: taking the best

affordable for more people. For more answers, better answers, reach us at www.compaq.com/power or 1-800-AT-COMPAQ.

Winner of the Database Race.

Ever wonder if there might be a new, powerful and easy-to-use database management system that can solve your performance and scalability problems?

It's called Caché — the “post-relational” DBMS that offers advanced object technology, Web connectivity and faster SQL performance. Caché can do so many good things that it has won a prestigious international award as “the most exciting new database product”.

Caché is already in use today in hundreds of enterprises, ranging from small entrepreneurial companies to the world's largest client/server network.

Caché is the latest database technology from InterSystems, the worldwide leader in high performance database products for transaction processing, with over 2,000,000 users... and 20 years of database experience.

The “best new database” is from a well-established company.

“Best New Database”

-1998 Information Management Award Sponsored by Deloitte & Touche Consulting Group



Corporate Strategies

Case Studies • Trends • Outsourcing

Briefs

Worldwide systems
integration revenues



*Projected
Base: Sales projections and
estimates of IT spending
Source: The Yankee Group, Boston

NASD hires EDS

The National Association of Securities Dealers Inc. (NASD) in Washington has reached an agreement-in-principle with Electronic Data Systems Corp. to create NasTech Alliance. The new entity will provide technology services to NASD and its regulatory arm, NASD Regulation Inc.

NasTech will be responsible for application development and maintenance, Internet development, Web hosting and distributed systems support.

Back office outsourced

Rosenbluth International, a Philadelphia travel management firm, has outsourced support of its back-office systems to Cognizant Technology Solutions Corp. (CTS). Under the five-year, multimillion-dollar deal, CTS will use its on-site/offshore application management approach to coordinate support teams at Rosenbluth's Philadelphia offices and CTS's software development facilities in India.

WHAT LOYALTY?

64% of employees would leave their jobs either for advancement opportunity, a 10% salary increase and/or more flexible hours

44% would leave just for better advancement opportunity alone and don't feel connected to their employers

54% don't know their firm's mission statement

Base: 10,339 workers in 13 nations
Source: Gemini Consulting Inc., New York

Turn friends into cash

► Referral programs have eased labor crunch

By Barb Cole-Gomolski

WHEN IT COMES to recruiting IT talent, it turns out that it is whom you know.

In the midst of the information technology labor drought, employee referral programs have proved one of the most inexpensive and effective methods to find personnel.

Cash awards that range from \$500 to several thousand dollars are typical for referring an IT professional who stays around for at least a few months. That's a pittance compared with the commissions paid to employment agencies, which typically range from 20% to 25% of the hire's base salary.

Jeanie Mabie, recruiting director at the North American practice of consultancy PricewaterhouseCoopers LLC, said about a third of the firm's hires are coming from its employee referral program, up 20% from a few years ago. Mabie said the firm saves \$5,000 to \$9,000

per hire through the program.

The savings appear to be holding, even though the ante has gone up for companies. In addition to hefty cash prizes, some companies are awarding trips and cars as part of their employee referral programs. For example, PricewaterhouseCoop-

ers gave away a Ford Explorer as its top prize this year, and US West Communication Corp.'s top prize was a trip for two to Hawaii.

At Carlson Cos. in Minneapolis, employees re-

Referrals, page 40

LABOR SHORTAGE

Retailers struggle to keep techs

By David Orenstein

CIOs AT MANY LARGE retailers are finding that they must not only pay full price, but also liven up their corporate culture if they are to woo away from richer companies the talented IT workers they need.

Even with lower profit margins than most other busi-

nesses, retailers now must offer competitive pay, flexible compensation and creative rewards.

Moreover, CIOs such as Evelyn Follit at Fort Worth, Texas-based Tandy Corp. find themselves changing cultures even as they change compensation — which Follit calls “a require-

ment just to play the game in today's marketplace.”

“We have extreme pressures,” she said. “Creative management — that is the bottom line today.”

Follit, who was hired last year as vice president of human capital with a mission of making

Retailers, page 40

Too many contractors

► Toys R Us goes cold turkey to save money

By David Orenstein

WHEN TOYS R US INC. CIO Tom Reinebach talks about why the company cut back from nearly 80 IT contractors to fewer than 10 last year, he uses the metaphor of addiction.

Contractors “get into your bloodstream,” he said. They are a “quick fix” that provide an injection of skilled workers who don't count as part of the department payroll. Because they are ostensibly temporary, he added, managers feel “I can stop anytime I want.”

Before Reinebach became CIO in 1996, the information technology department and its 80 contractors gave the business units the impression it could do the work of 300 work-

ers with only 220 employees in its budget. Because contractors (and their agencies) are paid more, real labor costs equaled a payroll of about 350.

Meanwhile, Reinebach said, problems mounted. Contractors originally hired for three to six

Contractors, page 40

Some market pressures for recruiting and retaining IT staff:

- IT employment will grow 108% from 1996 to 2006
- One in five IT staffers will leave their organization each year through 2002
- It takes an average of 6.2 months to replace each staffer with three or more years of experience
- Contractors are paid 30% to 100% more than regular employees
- 62% of IT workers rank pay as the most important job offer incentive

Sources: Evelyn Follit, CIO of Tandy Corp.; AON Consulting; U.S. Department of Labor

Pepsi seeks an edge with fleet-tracking

By Sharon Gaudin

PEPSI-COLA CO. is trying to save millions of dollars by keeping better track of its fleet of 24,000 trucks and vans. The move puts Pepsi on the right track, according to one analyst, but still leaves it behind the curve.

Pepsi is wrapping up an 18-month project designed to track

and manage maintenance, repairs and warranties on its trucks and vans in the U.S.

The application was designed to track warranties to help Pepsi collect paybacks for maintenance on vehicles under warranty, according to Gregg Jacobs, vice president of marketing at Prototype Inc. in Novato, Calif., which developed the software, called FleetAnywhere. It

also helps identify parts in the company's inventory that are in excess or that are obsolete.

“We didn't have a standard practice for handling fleet maintenance,” said Andy Yablin, operations support manager at Pepsi in Somers, N.Y. “We had people in Alaska who noted things on a piece of paper and people in Michigan who had

Pepsi's fleet, page 40



MARK STEARNEY

Retailers and IT pay

CONTINUED FROM PAGE 39

Tandy's information technology culture more competitive, is manipulating several levers to improve Tandy's recruitment and retention of key people with hot skills. Currently, 40% of the \$5.4 billion electronics retailer's compensation budget is given out as spot bonuses and other forms of variable compensation. Workers also can earn flex days, profit sharing and fun trips to amusement centers. And IT staff can dress casually — which has prompted employees from other business units to meet in her department so they can dress down, Follit said.

David Foote, managing partner at consultancy Cromwell Foote Partners LLC in Stamford, Conn., said retailers, which traditionally had little precision in business operations such as marketing, buying and inventory management, now face pressure to implement sharp data warehousing, forecasting and other applications to keep up with innovative competitors. That has caused IT shops once based almost entirely on old-school hierarchies and pay scales to refocus on creative ways to compete for workers with hot skills. "You've got to really be way out of the box," Foote said.

OUT ON THE MARGINS

Follit's challenge, as she scrounges for staffers who can fix the year 2000 problem, conduct an enterprise resource planning implementation and ensure the success of a new 5,000-store frame-relay network, is that she is competing against AMR Corp., the parent of American Airlines, and other Dallas-area employers. Last year, AMR's profit margin was 5.3%,

while Tandy's was 3.5%. Nevertheless, Tandy was obliged to offer the same 4% to 6% increase in pay that other Dallas-area IT workers received.

Competition also concerns Toys R Us Inc. CIO Tom Reinebach. The company's human resources department traditionally has compared its IT pay with that at other retailers. But at headquarters in Rochelle Park, N.J., local competition is really with Merck & Co., which had a margin of 19.5% last year. Toys R Us's margin was 4.4%. Until recently, the toy retailer supplemented its staff with scores of contract programmers who didn't count as paid staff. Now it is cutting those contractors and investing more money and career development in its full-time employees (see related story, page 39).

Seattle-based Starbucks Coffee Co. has struggled to fill IT jobs as it has grown by nearly a store a day in recent years, said CIO Deborah Gillotti. IT has grown from 30 workers in 1993 to 225 workers now — and the budget calls for 250.

Despite Starbucks' hip, upscale image, the company found itself in the same boat as older retail operations. "How do you make them want to stay? You have to make it fun," Gillotti said. Starbucks holds a "celebrate success" program every quarter to recognize what has gone well. Gillotti surveyed workers to find out what perks they want. (Many said telecommuting.) Starbucks is also investing in cross-training to help workers with out-of-date skills develop new ones.

"They have come a long way, and IT has been right in the middle of it," Foote said. □

Snapshot

1997 IT revenues as a percentage of total consulting revenues

FIRM	1997 GLOBAL MANAGEMENT CONSULTING (MC) REVENUE	1997 GLOBAL IT REVENUE	IT AS % OF MC TOTAL
Andersen Consulting	\$5.73B	\$3.35B	58%
Ernst & Young	\$2.68B	\$1.61B	60%
Deloitte Consulting	\$2.30B	\$1.15B	50%
KPMG Peat Marwick	\$2.01B	\$1.15B	57%
Coopers & Lybrand*	\$2.40B	\$0.96B	40%
Price Waterhouse*	\$1.40B	\$0.91B	65%
Arthur Andersen	\$0.95B	\$0.57B	60%

* Price Waterhouse and Coopers & Lybrand merged in July

Source: Kennedy Information, Fitzwilliam, N.H.

Referrals

CONTINUED FROM PAGE 39

ceive \$2,000 per month after the person they have referred is hired. In addition, they get \$1,000 per year for up to four years if the referred employee stays on the job, said Renee Bianchi, Carlson's human resources manager for IT.

At PECO Energy Co. in Philadelphia, the employee referral program started in IT and is spreading to other divisions, said Beverly Bujanowski, staffing manager. There is a sense that referred applicants are prescreened: "They are being recommended by someone who knows the corporate culture and thinks they will fit in," she said.

EASY BONDS

Recruiters said IT lends itself particularly well to referral programs because IT workers tend to develop strong bonds with their co-workers while on projects, and they may consider a job switch if a highly regarded colleague leaves. "Many [IT pro-

fessionals] go from company to company in small herds," said Dave Tyner, director of management and professional staffing at US West in Denver.

The telecommunications giant's referral program, called Telefriend, was implemented last February and is already producing 20% of its professional-level hires.

The program has resulted in 245 hires, 103 in IT.

Tyner said in the past the company was reluctant to launch a referral program for fear that, with 50,000 employees, it would be unmanageable. However, it has cut the administrative burden by putting key information — open positions, rules, referral forms, application forms and recruiting tips — on its corporate intranet. That saves the costs of printing and distributing paper forms.

Even with automation, these programs are a lot of work, recruiters said. At PricewaterhouseCoopers, "several full-time employees" handle the program, Mabie said. US West has one full-time person managing Telefriend, Tyner said. "We

thought we'd have a month or so to ramp up, but we got 500 resumes the first week."

Another possible drawback of employee referral programs is that they tend to reproduce your current workforce.

"There is a dark side to self-replicating," said Steve Knight, senior vice president of Integral Training Systems Inc., a consultancy in Half Moon Bay, Calif. "It's like dipping in the same gene pool." □

Contractors

CONTINUED FROM PAGE 39

months stayed for years. Employees working alongside contractors who were making 50% more began to envy them. When contractors left the company, institutional memory and technology left. Key development was partially outsourced.

Early last year, Toys R Us decided to renew just a few contracts. Only about half the contractors offered staff positions accepted, and Toys R Us gave employees raises with the savings. Reinebach declined to say how much the company saved.

There have been withdrawal symptoms, Reinebach acknowledged. The company lost several skilled contributors. The department, with a more straightforward head count, "had to get into more arguments with our user groups. We had to put more of a stake in the ground," he said.

In addition to the raises, Reinebach said, the company is now committed to developing talent from within its ranks. Toys R Us still uses a few contractors, but they aren't hired for more than six months, and they now must transfer skills to in-house employees. □

Pepsi's fleet

CONTINUED FROM PAGE 39

their own little system. . . . We're reducing fleet expenses, and in any business, that is critical."

The application runs with an Oracle Corp. database on an IBM RS/6000 Unix box. The FleetAnywhere software was designed to track work being done on the trucks in the 12 distribution units across the U.S. A Microsoft Corp. Windows NT server will gather the maintenance information and tabulate it in the 12 units, shipping the infor-

Pepsi's fleet project

Project length: February 1998 to December 1998

Software: FleetAnywhere from Prototype Inc.

Storage: Oracle database on an IBM RS/6000

Branch server: Windows NT

Approximate cost: \$500,000

Purpose: Tracking maintenance on 24,000 vehicles

mation back to the main database. The project started in February, with the first unit up and running in May. The project is expected to be fully operational in North America by December.

The software license cost Pepsi more than \$300,000, and the service contract is worth \$200,000, according to Jacobs.

"Any technology that can be leveraged in the cola wars is a

good investment," said John Dunkle, an analyst at Workgroup Strategic Services Inc. in Portsmouth, N.H. "Is it good compared to what other companies like Federal Express are doing? Probably not. Federal Express is tracking shipments, not just trucks. That gets more into customer service. . . . Pepsi should have been doing this two years ago when the technology was new."

Yablin said he couldn't put a price tag on the savings, adding, "It's a tough number to quantify, but we knew we could do a lot better than what we were doing." □



**Ask for three
proposals before
you award your
networking business.**

**Ask to see
this symbol, too.**



Putting your networking business out for bid is like putting your life on the line. You want to be certain your service provider has the right combination of services and technologies to meet your needs. You want to be certain of a reliable connection. You want to be certain of corporate security. You want to be certain your provider can grow with your business. That's where the Cisco Powered Network program comes in.

The Cisco Powered Network symbol is your assurance that a service provider is powered with the same equipment that virtually all the Internet traffic travels on today. Ask your service provider if they're part of the Cisco Powered Network program. Or visit www.cisco.com/cpn to find a list of authorized program participants. And take the uncertainty out of selecting your networking partner.



**Unisys enterprise-class solutions for Windows NT®
deliver security, power, and control.
No matter how many
different systems you're running.**



Put Unisys Single Point Security in a complex heterogeneous environment and you'll have the power to control your entire system from a central location anywhere on the network. Need increased security? Advanced external authentication tokens requiring smart cards and biometric scans are available to validate users before allowing them access. Unisys Single Point Security is just one of many ways Unisys delivers secure enterprise-class NT environments. It's why Microsoft has teamed up with us to create the Unisys/Microsoft Enterprise Partnership—an alliance designed to help customers capitalize on NT as an anchor for highly secure solutions. Stop by our Web site to find out more.

UNISYS

Internet Commerce

Extranets ♦ The World Wide Web ♦ Intranets

Briefs

NOT MUCH NET YET

How much of your organization's selling activity is now conducted via the Internet?

None	43%
1% to 10%	43%
11% to 25%	5%
26% to 50%	3%
51% to 75%	1%
76% to 100%	1%
Don't know	4%

Base: 113 IT managers at companies with annual revenue of at least \$1M

Source: Zona Research Inc., Redwood City, Calif.

Data, voice and video

Cisco Systems Inc. in San Jose, Calif., and Hewlett-Packard Co. in Palo Alto, Calif., have begun a joint effort to create a communications platform that will let service providers offer combined data, voice and video services over both the public telephone network and data-packet networks such as the Internet. The companies are combining HP's OpenCall platform with Cisco's ISO software to create OpenCall Multiservice Controllers. Products will begin shipping next year.

E-commerce modules

Microsoft Corp. has added two modules to its Site Server Commerce Edition. Online Auction and Commerce Interchange Pipeline Manager have been designed to aid the development of electronic-commerce servers.

Most popular products to buy online*

- 1 SOFTWARE
- 2 HARDWARE
- 3 BOOKS
- 4 TRAVEL
- 5 MUSIC
- 6 CLOTHING

*Based on analysis of several Internet market research studies

Source: "Iconoclast" newsletter published by Imagine Media Inc., Brisbane, Calif.; www.iconoclast.com

TV may force site tweaks

► Growth predicted in TV-based Net devices

By Sharon Machlis

ELECTRONIC-COMMERCE designers already must build sites that handle audiences with a wide range of technology available, balancing the needs of 28.8K bit/sec. modems with T1 lines, for example, and version 2.0 browsers with more current ones.

Soon, site designers may face yet another technology split: computer monitors vs. television screens.

For now, devices such as Microsoft Corp.'s WebTV are a small percentage of the Internet audience. But International

Data Corp. (IDC) last month predicted that shipments of various TV-based Internet devices will soar from 1.4 million units this year to more than 11 million in 2000.

DESIGN REQUIREMENTS

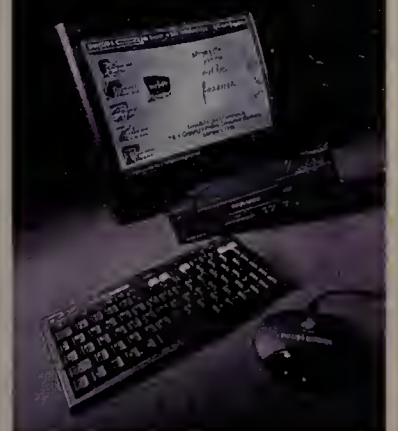
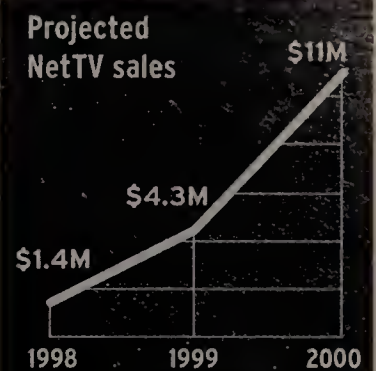
Those devices include not only WebTV, but also items such as cable and satellite set-top boxes that can deliver Internet data along with conventional TV programming. "This type of functionality is going to become a little more pervasive," said Kevin Hause, an analyst at IDC in Mountain View, Calif. IDC is a sister company to Computerworld.

If and when TV emerges as a

major factor in Web surfing, several site designers said some of those surfers may have to forgo aspects that depend on client-side computing, such as Java applets. That's already the case for those who use older browsers.

Because of differences in screen size, resolution, color palettes and the like between televisions and computers, a Web site's appearance tends to change when viewed on a TV screen — and not always for the better. "It doesn't look as good on WebTV," said Cyndy Ainsworth, director of marketing at Virtual Vineyards, the wine and gourmet food site run by Net Contents Inc. in Palo Alto, Calif.

TV and sites, page 46



Source: International Data Corp., Framingham, Mass.

Unified message apps accent accessibility

By Matt Hamblen

THE VOICE of Webley, a proper English butler, greets users of a new unified messaging service that analysts say is part of a resurgence of products that bring E-mail, fax and voice mail together in a single interface.

Actually, Webley isn't a butler or even English. The voice is a

marketing creation of start-up Webley Systems Inc. in Deerfield, Ill., which hired an American actor to record the voice for use in its Webley unified messaging service.

When you dial in to an 800 number from a remote location, Webley can play your voice mail following your voice commands or can even let you listen to in-

coming E-mails or faxes that Webley reads to you using text-to-voice software. After you're done listening to your E-mail, you can respond using your own voice, which Webley will deliver in a RealAudio attachment.

"When I got the service, I thought people would be turned off by Webley's voice, but the response I've gotten is that he's

so neat," said John Cohen, president of consultancy PSComm LLC in Gaithersburg, Md., which has been a Webley Systems customer since May. "Some of my customers have even asked to meet Webley."

PSComm provides consulting advice to government officials, who often need quick access to consultants on the road. Cohen

Unified message, page 46

Sun widens abilities of apps server

By Carol Sliwa

WHEN SUN MICROSYSTEMS INC. late last month announced its plans for the application server it acquired this summer from NetDynamics Inc., the road map came as welcome news for many of the companies that have been using the product.

The NetDynamics application server — which helps develop-

ers write, run and maintain scalable, distributed applications that serve up information from databases to Web browsers — will be offered immediately as a bundled option with any Sun server for a 20% savings over the usual NetDynamics pricing.

But Alan Baratz, president of Sun's Java Software Division, also said end users can expect tighter integration of the application server and the Solaris operating system.

GetSmart.com, a Burlingame, Calif.-based company that takes online loan applications for 118 lenders, hopes that will mean its Unix administrator can manage and tune both its Unix

Sun apps server, page 46


Snapsho

What Web surfers do online

	REGULARLY	OCCASIONALLY
Send/read E-mail	92%	5%
Use search engines	83%	12%
Research products/services	55%	34%
Gather local information	53%	34%
Visit news sites	49%	37%
Visit online directories	35%	46%
Visit online stores	29%	50%
Download software	35%	43%
Read magazines/newspapers	31%	41%
Visit TV/movie sites	25%	45%
Enter contests/sweepstakes	27%	41%
Visit music sites	29%	39%
Investigate travel options	24%	43%
Visit personal Web pages	29%	36%
Use chat rooms	21%	32%

Base: Survey of 2,500 online consumers

Source: Jupiter Communications Inc., New York, and NFO Worldwide Inc., Greenwich, Conn.



Ever made a rational decision
with all your heart?

Meet the most personal of personal computers: The very latest Compaq Armada notebooks. They're

anything a desktop can—**COMPAQ** anywhere you want. Notebooks that redefine the

Armada notebook that's
Better answers.™
(perfect for you) call 1-800-AT-COMPAQ. Or simply



notebooks that marry exceptional mobility with uncompromising performance. Notebooks that do

concept of value. To locate a reseller (and the

visit www.compaq.com/products/portables/.



The New Compaq Armada.



Bookseller beefs up products, searches

► Barnesandnoble.com update targets Amazon

By Sharon Machlis

BARNESANDNOBLE.COM in October fired another salvo in its closely watched battle with blue-chip Web book retailer Amazon.com, unveiling a redesigned Web site with more product offerings and improved search capabilities.

"I see this as a step forward for Barnesandnoble.com," said Preston Dodd, an analyst at

Jupiter Communications Inc. in New York. "I also see this as a work in progress."

Despite its competitor's site revamp, Amazon.com remains the acknowledged leader in on-line bookselling. But Barnesandnoble.com is expected to evolve further after the recent \$200 million investment from German media conglomerate Bertelsmann AG, Dodd said.

Bertelsmann currently owns

half of Barnesandnoble.com.

Barnesandnoble.com beefed up its product offerings in conjunction with several outside partners, including the popular electronic greeting card site Blue Mountain Arts (www.bluemountain.com).

It offers out-of-print and antiquarian books via Advanced Book Exchange Inc., which boasts a network of 3,600 dealers.

A key question for the redesign was, How do we package multiple [offerings] into a sin-

gle, cohesive product? said John Kristie, vice president of information technology at Barnesandnoble.com in New York.

The site has enhanced its search capabilities, offering an option to search for related magazine and newspaper articles after seeking books.

The articles must then be purchased electronically, through a deal with Northern Lights Technology LLC (www.nlsearch.com).

The redesign also worked to

speed up page loading through more streamlined graphics and "creative uses of HTML," Dodd said.

That includes more use of HTML, the Web programming language, in navigation bars instead of pure graphics, which take longer to load.

Despite the revamp, Barnesandnoble.com "is consistently less elegant or direct than Amazon.com. Activities that are possible on Amazon.com's site in one or two clicks seem to take three to five clicks on Barnesandnoble.com," said Shelley Taylor, a Web design analyst at Shelley Taylor & Associates in Palo Alto, Calif. □

Unified message

CONTINUED FROM PAGE 43

is able to give out one 800 phone number for any client to reach him for sending voice and fax messages.

Cohen said he was attracted to Webley at first because it didn't require any expensive equipment to be installed on his premises, although several large companies are now selling equipment for customers to set up the service themselves.

Analysts said the Webley voice gives a user-friendly, if quirky, quality to unified messaging, a field that appears to suddenly be expanding after years of slow growth.

BIG PLAYERS

Oracle Corp. and Nortel Corp. in the past month have announced unified messaging products with voice-recognition features that they plan to sell to large voice and data carriers, said Kathleen Dexter, an analyst at Gartner Group Inc. in San Jose, Calif.

Analysts said they expect that carriers and Internet service providers will soon begin offering unified messaging along with Internet access for a fixed monthly fee. Consumers and some executives will respond to that fixed price model, Dexter said, though she said she doubted whether Webley's flat monthly fee — which starts at \$10, plus 14.9 cents per minute of use — will attract many heavy business users.

Those calling in on cellular phones must also pay their carrier for the 11 cents or more per minute of use, which is a further deterrent. But Webley officials are trying to work with cel-

Webley unified messaging system highlights:

- Speak any of 2,000 names and a call is automatically dialed
- Listen to, reply to or forward E-mail over the phone using voice activation
- Forward E-mails to a fax by speaking the contact name or fax number
- Instantly synchronize a personal contact list from a PalmPilot or Microsoft Outlook via the Internet

lular carriers to reduce the total, company officials said.

Dexter cautioned companies considering contracting with Webley or another outside unified messaging service that the users of the new system will be "in a separate world" from those users in the same company who are on an incompatible voice-mail system.

Nortel makes a unified mes-

saging product that works atop its own voice-mail software in its Meridian public branch exchange switches, but such compatibility is uncommon, Dexter said.

With large hardware makers offering unified messaging products and Webley's per-minute pricing, Dexter said, "Webley stands a big chance of getting lost." □

Sun widens abilities of apps server

CONTINUED FROM PAGE 43

systems and NetDynamics server for optimal performance and reliability. The company now has different people tending to the Unix and NetDynamics products.

Additional Sun plans for the NetDynamics line include the following:

- Continued support for other platforms, including Windows NT, HP-UX and AIX. That might help programmers such as those at Southern California Gas Co., for instance, who do their development work on Windows NT because it's cheaper. Then they deploy the application on Solaris.
- Support for Enterprise JavaBeans (EJB) in next year's first quarter.
- Integration of Microsoft Corp.'s Component Object Model (COM)

through a NetDynamics Platform Adapter Component.

■ Licensing Inprise Corp.'s VisiBroker Integrated Transaction Service, an object-oriented transaction monitor for distributed systems.

Though the schedule to support EJB puts the NetDynamics server behind EJB-compliant offerings that have been trickling out this fall from other vendors, many users said they don't need immediate support for EJB and would rather wait for a more solid offering.

NationsBanc Services Inc. in Chicago, for example, is exploring the use of EJB to further reduce the amount of code that developers need to write and maintain for online applications used by its decision-makers. But the company is perfectly con-

TV effects on Web sites

CONTINUED FROM PAGE 43

In addition, site strategies should change to attract users who are sitting on a couch across the room, said John Schmitz, vice president of design at Interactive Bureau LLC in New York, a major Web design house.

"You're generally viewing it in a very different way," he said of TV-based Internet data. Although the computer user may read small type and scan for information, the TV surfer is more likely to be in an entertainment frame of mind — even when looking at a news or shopping site.

"You need to have much faster impressions of what you're seeing. It's going to have

to look much more like advertising on television looks. . . . Doing an online newspaper [or catalog] is not going to cut it," Schmitz said. That means more pictures, larger type and fewer words.

SMALL AUDIENCE

Only a handful of sites are developing versions optimized for TV viewing because the current Internet TV audience is so small.


Tom Lix, president and CEO of Web design firm Newmarket Network in Boston, decided not to design the popular *Car Talk* site (for National Public Radio's syndicated auto advice show) for WebTV after the site's 1996 launch, when WebTV had sold about 100,000 units.

"It's hardly worth worrying about" right now, Lix said. "When it gets bigger, we will design for it." Web sites can be redesigned

fast enough that he can afford to react to moves in market share and not try to predict them, he said.

In Europe, digital TV is "quickly emerging as a second interactive platform, competing with the Internet for consumer interactivity," according to a study released last week by Jupiter Communications Inc. at its Online Forum in London. Jupiter predicted that by 2002 digital TV interactive services will penetrate 19% of British households, 12% of French homes and 28% of Swedish homes. □

"You need to have much faster impressions of what you're seeing," says Interactive Bureau's John Schmitz.



He's not sure where the network closet is yet. But he does understand how vital information is to the success of the company. And with a StorageTek® solution in place, he knows his users can access, move and share that information effortlessly, across the enterprise. (Not a bad thing when you're the new guy.)

IT'S HIS FIRST DAY ON THE JOB. *(Of course he already knows everything.)*

With the latest StorageTek innovations, you can manage information in ways you never thought possible. Our unique OPENstorage™ solutions combine the best of disk and tape with ultra-SCSI and fibre channel connectivity, for exceptional speed of access across NT®, NOS and UNIX® platforms. And you'll have the power to control it all from a single location.

StorageTek solutions give you maximum scalability, so you can handle growth with ease. And built-in redundancy eliminates single-point failure, so your data is always available. All of which means storage you can feel confident about from day one. To learn more, call 1-800-STORTEK today, or visit us on the Web. Next thing you know, you'll know—well, pretty much everything.

www.storagetek.com/firstday

StorageTek
Information Made Powerful™



ProVision

The modular enterprise
management solution that
fits your needs, not just
your framework.

Your search is over.



PLATINUM
TECHNOLOGY

Look into ProVision.

I'm interested in the
enterprise management
area(s) checked:

- ☐ Desktop
- ☐ Application
- ☐ Database
- ☐ Network
- ☐ Systems

n a m e _ _ _ _ _

t i t l e _ _ _ _ _

c o m p a n y _ _ _ _ _

a d d r e s s _ _ _ _ _

c i t y _ _ _ _ _

s t a t e _ _ _ _ _ z i p _ _ _ _ _

p h o n e _ _ _ _ _

f a x _ _ _ _ _

Get our free on-line demo at **www.platinum.com/search**
or for more information, fill out and mail this form or call **1-800-890-7528 x10203.**

AD-CW-1203-RC



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 706 VILLA PARK, IL

POSTAGE WILL BE PAID BY ADDRESSEE

PLATINUM TECHNOLOGY
1815 S MEYERS RD
OAKBROOK TERRACE IL 60181-9905



Systems

Management

Increase productivity and availability by automating your repetitive tasks, centralizing job scheduling, securing user and data access, and improving application performance.

Database

Management

Maximize your data availability and response time while improving performance, increasing application efficiency and enhancing reliability of the underlying databases.

Application

Management

Manage, monitor and enhance the functionality of your mission-critical applications to improve user service levels, automate operations, and guarantee high performance and availability.

Desktop

Management

Centrally manage your desktop environment through automated configuration management, software distribution and inventory, and a consolidated service desk to enhance efficiency and productivity.

Network

Management

Proactively monitor, manage, and analyze your network and Internet to identify potential bottlenecks, increase uptime, improve response times, and quickly resolve problems.


Finally, there's one solution for managing your enterprise. Modular, so you can deploy what you need, when you need it. Comprehensive, so you can manage it all. Call 1-800-890-7528 x10203, or visit: www.platinum.com/search

make **IT** shine™

data • systems • apps

PLATINUM
TECHNOLOGY

The SAS Data Mining Solution



just bought
a computer,
looking for
an Internet
provider

hobbies include
restoring vintage
cars and collecting
rare coins

wants information
about new
investment options

Instead of just storing customer data, give your decision makers the *whole* story.

There are a million stories in your customer data—and they're all ready to be sold. With the SAS Data Mining Solution, you can provide your sales force, department managers, and other decision makers with the tools they need to gain true business knowledge.

Which prospects are hot? Or not? Which target groups need to be ignited...or simply delighted? The answers are revealed with the SAS Data Mining Solution. It's the **only** software that spans every facet of the data mining process, delivering ease of use and analytical depth in a single package—one that draws directly from the award-winning SAS Data Warehouse.

Just point and click. Decision makers don't have to be statisticians, or database experts, to convert very large amounts of data into immediate competitive advantage. To find out more, including real-world success stories and an interactive demo of the SAS Data Mining Solution, visit us at www.sas.com/datamine

**Full range of models
and algorithms**

**Maximize your data
warehousing investment**

**Exploit detail-level data to
achieve measurable results**

Fully Web enabled

Year 2000 compliant

 **SAS Institute Inc.**
The Business of Better Decision Making

www.sas.com/datamine E-mail: cw@sas.com Phone 919.677.8200

In Canada phone 1 800 363 8397 SAS is a registered trademark of SAS Institute Inc. Copyright © 1998 by SAS Institute Inc.

The Enterprise Network

LANs • WANs • Network Management

Briefs

Multispeed switch

Hitachi Internetworking in Santa Clara, Calif., has announced the HiSpeed 170-100-24 switch, which has 24 10M/100M bit/sec. ports. It costs \$2,995 and is shipping now. Hitachi also detailed the 170-100-24-2SX, which has 22 10M/100M bit/sec. ports and two Gigabit Ethernet ports. It will ship by year's end. Pricing wasn't announced.

Notes grows

Lotus Development Corp. has reported that it licensed more than 3 million Notes seats in the third quarter and is on track to achieve its goal of selling 12 million new Notes seats this year. The Cambridge, Mass.-based company reported a total installed base of more than 29 million Notes seats and attributed the growth to consolidation in the market and "trade up" incentives to users of competing and older systems.

GroupWise calendaring

Novell Inc. has made the public beta of its GroupWise Print Pack for calendaring available for free at <http://support.novell.com/beta/public>. The system works on GroupWise 5.2 or higher 32-bit clients, including the GroupWise 5.5 32-bit client.

HACKING RATE

Has your network security been compromised by an external intruder within the past 12 months?



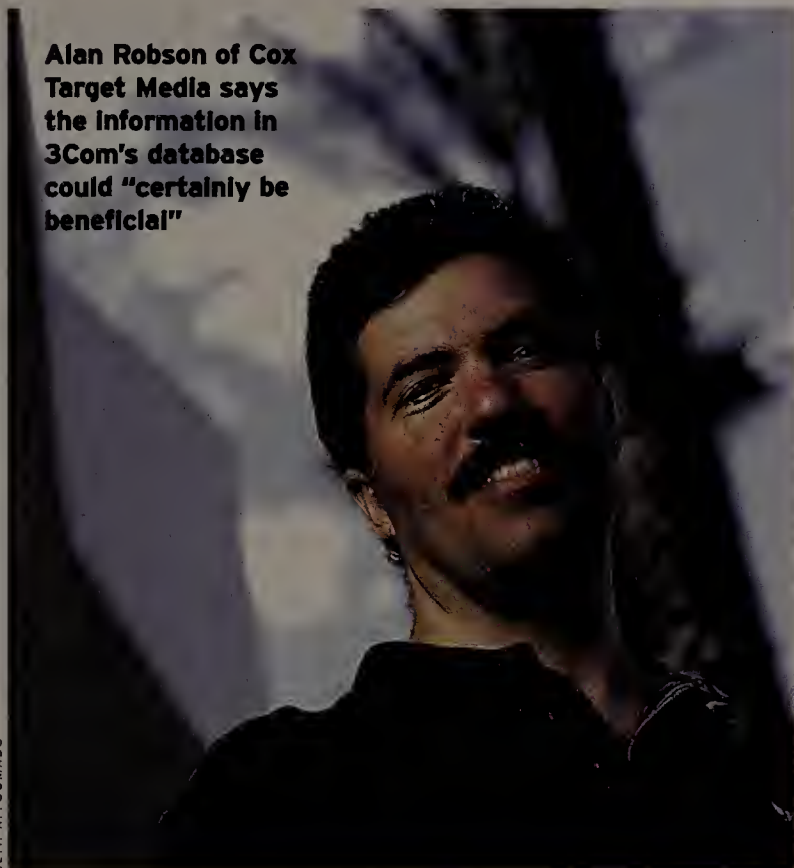
- Yes
- No
- Don't know

Base: 169 IT managers at companies with annual revenue of at least \$1M

Source: Zona Research Inc., Redwood City, Calif.

3Com offers support on Web

Alan Robson of Cox Target Media says the information in 3Com's database could "certainly be beneficial"



SETH AFFOUNADO

By Bob Wallace

AFTER NEARLY a year of requests from some of its largest users, 3Com Corp. two weeks ago launched an Internet-based knowledge database service designed to eventually provide answers to problems for all its product lines.

3Com Knowledgebase (<http://knowledgebase.3com.com>) is a database of answers 3Com engineers generated in response to questions addressed to the company's technical support services. The free Web-based service was designed to provide a quicker and less expensive alternative to users who would otherwise

call the vendor's technical support group.

After registering for the around-the-clock service, a user enters a description of the problem. The system matches the problem with similar problems in its database, then presents a list of options to the user. List choices narrow the search and direct the user to the answer.

"We've been pushing for this type of information on the Net, and it's proved to be very useful," said Knowledgebase beta tester Bob Napier, a senior network engineer at Lockheed Martin Corp. in Oak Ridge, Tenn., and a vice president of 3Com's user group. "We were able to find out how to activate advanced features on a 3Com switch without having to call technical support. It saved us a lot of time."

"We've been pushing for this type of information on the Net, and it's . . . very useful."

**— Bob Napier
Lockheed Martin**

The initial release of Knowledgebase contains technical solutions for hubs, switches, LAN and PC modem cards, network interface cards and remote-access products. Information on

PalmPilot and video networking products will be added soon.

Cisco Systems Inc. and Bay Networks Inc. offer similar Net-based services, but unlike 3Com, their customers must buy support contracts to use the offerings.

Users benefit in two ways, said Richard Brewer, a senior analyst at International Data

3Com, page 52

Workflow system may save Lockheed Martin \$1M

► Benefits may ripple throughout company

By Roberta Fusaro

AIRCRAFT MAKER Lockheed Martin Corp. has halved forms-processing times with a workflow system that may save it more than \$1 million by 2001. But its main intention was to reduce the amount of time and paper being lost during its quality assurance process.

Lockheed Martin Corp.'s Tactical Aircraft Systems Division in Fort Worth, Texas, last December started to meld ActionWorks workflow technology from Action Technologies Inc. in Alameda, Calif., with its existing imaging and manufacturing resource planning system running on Windows NT.

The division produces the F-16 fighter jet for the U.S. Air Force and sections of the F-22 and the F-2 fighter planes. There are more than 10,000

employees on site. More than 300 employees in the F-22 and F-16 units use the ActionWorks-based system, and officials said the system may be rolled out to other departments.

Documentation papers would sometimes get lost as they were passed from station to station for approval, said David Andrews, deputy project manager for the quality assurance systems. That held up the billing process and became a major issue for customers, he said.

RESOURCE PLANNING

The quality assurance process — in which factory floor inspectors report on product nonconformances and production findings — often involved 50 manual hand-offs of documents and reports and took 20 to 30 days to complete, officials said.

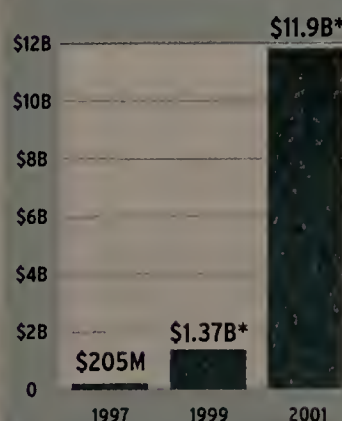
The ActionWorks system has cut that cycle time in half. Plus, "we don't lose documents anymore, and [we] have greater accuracy in documents," said Marshall Stewart, chief of infor-

Lockheed, page 52

Big boys flex VPN muscles

VPNs SHOW PROMISE

Worldwide spending on virtual private networks (VPN)



*Projected

Note: Includes VPN products, branded services and integration services

Source: Infonetics Research Inc., San Jose, Calif.

By Bob Wallace

USERS WAITING for more virtual private network (VPN) choices from large vendors got their wish two weeks ago, when Intel and Cabletron announced products that would compete with offerings from market leader Cisco Systems Inc.

Intel Corp. in Santa Clara, Calif., paid \$185 million for remote access and VPN vendor Shiva Corp. in Cambridge, Mass., and Cabletron Systems Inc. in Rochester, N.H., announced two VPN routers at the Network/Interop '98 conference.

And Cisco in San Jose, Calif., last week confirmed plans to

VPN, page 52

Firms save by talking over IP nets

By Matt Hamblen

IN THE PAST year, small and midsize companies have begun buying products to send voice traffic over the Internet Protocol (IP) to save dollars, analysts say, although big corporate users are still in the testing phase.

Two weeks ago, Lucent Technologies Inc. in Murray Hill, N.J., moved the technology forward by announcing IP ExchangeComm, a software-based system that combines voice, data and fax communications over a single IP network. Pricing was not announced for the technology, which is slated for

March release.

Challenge Dairy Products Inc. in Dublin, Calif., one of four companies testing the technology, will link 175 employees in nine branch locations throughout California by voice and fax over IP, said Eric Grosshans, Challenge's network manager.

DROP IN COSTS

Starting in December, Grosshans said, he expects the monthly costs of voice and fax communication between branches to fall by more than half, from \$1,000 to perhaps \$300.

Grosshans said product demonstrations have shown that the voice quality is good, depending on the phone used.

"Sometimes you have to be a hair patient waiting for a response, but it doesn't cause any anger or frustration," he said. "We're not going to be using it to talk to customers, just employees."

Even the largest companies indicate in surveys that they hope to put some of their voice traffic over IP in two years to

save costs over long-distance land-line calling, analysts said. Instead of paying for long-distance service, companies would pay only for Internet access at rates that are a fraction of long-distance costs, analysts said.

Siemens AG, Nortel Inc. and

Cisco Systems Inc. and dozens of smaller vendors are looking to the market for voice-over-IP products within large companies. That market, about \$50 million this year, is ex-

pected to exceed \$1 billion by 2002, said Hilary Mine, an analyst at Probe Research Inc. in Cedar Knolls, N.J. □

"Sometimes you have to be patient, but it doesn't cause any frustration."
— Eric Grosshans, Challenge Dairy Products

Big boys flex VPN muscles

CONTINUED FROM PAGE 51

lengthen its VPN product line with a new router platform that adds VPN capabilities. But the company provided no details.

"[Until now] the leading players in the VPN market had been smaller companies with limited resources. . . . The latest entries can [devote] more to product development and innovation," said Eric Zines, VPN analyst at TeleChoice Inc., a consultancy in Boston. And the entry of bigger players also helps validate the VPN industry for users, he added.

"These moves are a sign of continuing industry maturity and acceptance, which makes us feel more comfortable about VPNs," said Troy Kent, a lead engineer at Entergy Services Inc., a Gretna, La., utility.

Kent is considering implementing a VPN to support remote workers. He would like to see equipment vendors team with service providers to offer end-to-end managed VPN offerings that include equipment management.

LESS EXPENSIVE

VPNs are a collection of secure links over an IP-based network such as the Internet. As such, they're less expensive than traditional private company networks that use dedicated data lines.

Today, many users continue to voice concerns about security and performance of the Internet as the VPNs' conduit. But that hasn't slowed equipment providers.

Cabletron weighed in with the SmartSwitch Router 510 and 520. Both support IPSec and the Layer 2 Tunneling Protocol. They're due next month at \$2,450 and \$2,250, respectively.

Buying Shiva will give Intel a broad line of VPN products called the LanRover VPN Gateways. Shiva will operate as a wholly owned subsidiary and become part of Intel's Network Products Division.

Shiva also has extended its product line with the introduction of the LanRover VPN Gateway Express, a VPN offering for branch offices and small to midsize businesses.

It can support 50 simultaneous tunnels. It will ship by year's end with 50 client licenses costing \$2,995. □

Lockheed

CONTINUED FROM PAGE 51

mation resources management for the quality assurance system.

With the new system, inspectors' reports and proposed resolutions are entered electronically and routed to a material review board for disposition. For production problems, an order for replacement parts is automatically sent to the material review system. Approved parts are delivered to the factory floor, and the case is closed by the quality inspector.

Factory workers can now make process changes on the fly, which speeds time to



The workflow system keeps quality assurance approvals for fighters online and on schedule

production.

"Likewise, with the design of the database, we can add more views and capture more information more easily. Both tasks previously were pretty costly," Stewart said.

Connie Moore, a vice president at Giga Information Group, a research firm in Norwell, Mass., said ActionWorks' strength is that it approaches workflow from a knowledge worker's perspective, anticipating that conversation and negotiation happen before a task in a workflow process can take place. □

3Com offers support on Web

CONTINUED FROM PAGE 51

Corp., a sister company to Computerworld in Framingham, Mass.

"Users don't have to wait on or sit by the phone for technical support," Brewer said. "Also, 3Com can [reassign] its very expensive and hard-to-find telephone support people to solving more complex problems."

"We'll check it out before we make calls to technical support because it sounds like the information it contains would certainly be beneficial to us," said Alan Robson, director of network systems at coupon giant Cox Target Media Inc. in Largo, Fla.

"We'd use Knowledgebase for a problem resolution such as erratic behavior from a LAN switch," Robson said.

Knowledgebase also has technical tips on functions, such as resetting switch passwords, configuring adapter cards to support Windows 95 and

locating drivers.

There's room for improvement with Knowledgebase, said Napier, who suggested 3Com include a list of known bugs for which fixes aren't yet available. 3Com plans to make that available by year's end, a spokeswoman said.

FEWER FIXES

And it would also be nice to be able to stay connected to Knowledgebase and download software from there, rather than having to go to another site to get software updates for switches and other fixes that users must do now, said another beta tester, Kim Baryluk, network manager at the University of Saskatchewan in Saskatoon.

3Com has already created links for some products and aims to do so for every product, according to the company spokeswoman. □

NEW PRODUCT

NETIQ CORP. has announced AppManager 3.0, software that centrally monitors the performance and availability of distributed Windows NT environments.

According to the Santa Clara, Calif., company, the new version of the software includes 150 prepackaged reports, extends hardware metric monitoring and adds support for server applications such as Microsoft Corp.'s Terminal Server.

Pricing for the software starts at \$600 for managed systems and \$2,500 for consoles.

NetIQ
(408) 330-7000
www.netiq.com

Novell, Lucent to offer policy-based switching

► System will accommodate users' needs

By Sharon Gaudin

NOVELL INC. is teaming up with Lucent Technologies Inc. to produce technology that gives people access to corporate networks based on who they are instead of what terminal they're using.

Lucent plans to bundle Novell Directory Services (NDS), a cross-platform, file-based directory, with its Cajun Switch. The combination was designed to add the ability to create policies

for how different types of end users can use the network.

The switch could use the directory to identify an engineer working on a major project and deliver more bandwidth than would be available to an administrator in human resources.

USER PROFILES

"When you define a user's profile, you can define . . . that user's priority over other users, as well as his use of some appli-

cations over others," said Robert Marschall, Internet services marketing director at AT&T Corp. in Bridgewater, N.J.

"More bandwidth is an economic choice," Marschall said.

AT&T uses NDS for its virtual private network and plans on using the policy-based switching, according to Marschall.

Microsoft Corp. and Citrix Systems Inc. have said they will work on a policy-based switching project, but they haven't announced a schedule for the project. □

WHAT EXACTLY
IS IBM'S
POSITION
ON WINDOWS NT SERVERS?





IN THE
BASEMENT
OF THE 30 STORY
HEADQUARTERS
OF A FORTUNE 500
COMPANY.

THE IBM NETFINITY 7000 SERIES. HIGH PERFORMANCE SERVERS FOR WINDOWS NT.

e-business means a lot of things. It means moving business to the Web. It means improving relationships with customers, suppliers and employees — boosting communication and efficiency both inside and outside an organization. It means looking at data in new and meaningful ways.

e-business also means looking at PC networks in new and significant ways. And it's probably not much of a surprise to hear that Windows NT® has become one of the most popular new operating systems in the corporate world.

In 1997, use of The Windows NT Server operating system grew by 139% world-wide, reaching a 34% share of all server operating systems (source: IDC).

What you may not know is that IBM is building Intel®-based servers with the power to run the major business applications — from companies like SAP, Baan, JD Edwards, Oracle and QAD — used in the largest of corporate networks.

But it isn't **power and reliability alone** that distinguish Netfinity servers from their would-be peers. It's that they come loaded with things like IBM Netfinity Management tools — a comprehensive set of standards-based software tools that make it easier to manage and run your network. And that when you add advanced e-business tools like Web Server Accelerator (it's free on the Net), you can optimize

performance by up to 60% when a Netfinity 7000 M10 server is used to serve up the Web.* It's that we work with industry leaders like Intel to bring new, more powerful technology to market — in servers designed to use it to its fullest.

The Netfinity 7000 M10 server, for example, is powered by the new Intel Pentium®II Xeon™ processor 400 MHz, providing it with some of the highest performance benchmarks in its class. (Visit www.pc.ibm.com/us/techlink/srvperf for details.)


History, plain and simple, also separates Netfinity servers from all others. IBM has been building mission-critical systems for the corporate world for decades, and now we've applied that expertise to the world of Windows NT. Netfinity servers are the first to offer scalable parallel technology with a clustered system and hot-plug PCI implementation. Netfinity servers also offer scalability features you don't expect in a server running Windows NT — like the ability to hot-swap hard disk drives, adapters, power supplies, and more — without taking your network down. Netfinity servers are also quick and easy to integrate into your existing IT infrastructure, whether it's powered by IBM (thank you) or not.

Netfinity servers from IBM aren't just tools for big business, they're tools for big e-business.

FACT

IBM NETFINITY 7000 M10

Up to 4-way Intel Pentium II Xeon processors (400 MHz) / Up to 8GB ECC interleaved memory / Prices starting at \$11,968*

 e-business tools

LOCKED IN
A WINDOWLESS
ROOM ON THE
8TH FLOOR
BETWEEN SALES
AND MARKETING.



IBM

THE IBM NETFINITY 5500 SERIES. WITH INTEL PENTIUM II XEON PROCESSORS.

The real explosion of Windows NT servers has been at the departmental level — starting with desktop computers and then connecting those desktops into larger networks, enterprise servers and legacy systems.

The growth of intranets, Web commerce and sophisticated custom apps built with powerful cross-platform software like Lotus® Domino™ has fueled the demand for powerful, reliable servers that connect thousands of PC users inside an organization — from sales reps in the field armed with ThinkPads, to desktop users in customer service departments. Servers like the Netfinity 5500 Series.

FACT

A server is a repository of information, information that quickly becomes powerful business intelligence when fully exploited. This is e-business. Knowing more about customers, what they need and want. Mining growth out of details. Uncovering new markets (and margins) from within.

All these people connected via Windows NT servers also need access to the detailed information that resides on the more powerful systems that are the core components of a major enterprise (like, say, an IBM RS/6000 SP UNIX®

server capable of processing millions of transactions a second). In such a world, the ability to quickly and seamlessly integrate departmental Windows NT servers into your larger IT infrastructure is critical.


Netfinity servers, like the new Netfinity 5500 M10, help simplify this integration. Take, for example, IBM Netfinity Manager software. It ships with every IBM Netfinity server. It's platform agnostic. It lets you manage clients and servers from dozens of leading manufacturers. It also helps you tie your Windows NT network into enterprisewide management software such as Tivoli® Enterprise™, Microsoft® SMS™ and Intel LANDesk™.

This is what e-business is all about — not just building powerful servers for departmental use (and make no mistake, the Netfinity 5500 M10 can handle everything from huge e-mail networks to 24/7 Web commerce), but also providing tools to integrate and manage those servers as part of a much larger network. This helps you control costs and keep your network up and running.

This is the difference between a plain-Jane server and an e-business tool.

Up to 2-way Intel Pentium II Xeon processors (400 MHz) / Up to 2GB SDRAM ECC memory / Prices starting at \$8,318*

IBM NETFINITY 5500 M10

 **e-business tools**

IN THE

BACK OF A PET SHOP

BETWEEN A PALLET
OF ORGANIC DOG FOOD
AND A STACK OF
GUIDES TO BEING A
WEB ENTREPRENEUR.



*Netfinity 7000 M10 performance, configured with four Intel processors and running Microsoft Windows NT, compared to next best competitor results on SPECintbase95 benchmark as of July 17, 1998. Server configuration and test environment may vary. Estimated reseller price to end users for model 66601RU (Netfinity 7000 M10), 66611RY (Netfinity 5500 M10), 667616U (Netfinity 3000). All include IBM 4.5GB hard disk drive. Certain features described are available for an additional charge. Network operating system not included. Actual reseller prices may vary. MHz denotes microprocessor internal clock speed only; other factors may also affect application performance. For terms and conditions or copies of IBM's standard Limited Warranty, call 1 800 772-2227. In the U.S., Limited Warranty Service in those countries where this product is sold by IBM or IBM Business Partners (registration required). IBM product names are trademarks of International Business Machines Corporation. Microsoft, Windows and Windows NT are trademarks of Microsoft Corporation. Lotus, Domino and Domino Intranet Starter Pack are trademarks of Lotus Development Corporation. Intel, the Intel Inside logo and Pentium are registered trademarks and Pentium II Xeon is a trademark of Intel Corporation. Other company product and service names may be trademarks or registered trademarks of others. © 1998 IBM Corp. All rights reserved.

THE IBM NETFINITY 3000 SERIES. AFFORDABLE SERVERS FOR WINDOWS NT.

But what if you're not a large business yet — or even a medium-sized business? What if the sales department doubles as the marketing department? What if corporate HQ is your desk? And your bedroom back at home seems more like a 24-hour branch office than a place to sleep?

Well, IBM is making servers for growing businesses with all their growth still to come. That means prices you can afford right now on a server that runs Windows NT: the basic Netfinity 3000 server (complete with an Intel Pentium II processor, speeding along at 300 MHz), for example, starts at just \$2,365.*

That's a very affordable server — but not a stripped one. Like all Netfinity servers, the Netfinity 3000 comes standard with Lotus® Domino™ or Lotus Domino Intranet Starter Pack,™ not to mention Netfinity Manager software.

This makes it easy and inexpensive to put your business on the Web, allowing millions of customers around the world to reach you. So you can grow from a very small business (say, for example, one pet store) to a very large one (say, the world leader in designer dog chow sales). As your business grows, you'll appreciate the

virtues of the systems management software that makes it vastly easier to keep your network up, running and generating more business. Nothing wrong with that.

Every Netfinity server includes a 3-year limited warranty and 90-day Start Up Support. Leasing plans, automatic 2-year product refreshes, customizable support, system installation and integration are available, if you desire, through our SystemXtra program.


FACT

Of course, the value, quality and reliability of the Netfinity 3000 server is such that a whole bunch of not-so-small businesses will choose them by the dozens for things like print spooling and file management. Not the most glamorous tasks, but the day-in, day-out, got-to-be-dependable side of e-business.

If you'd like to know more about the full range of IBM Netfinity servers, financing arrangements and server options — from supplemental storage to fiberoptic connections — bookmark www.ibm.com/netfinity.

You'll find we have the kind of e-business solutions you're looking for. Solutions for a small planet.™

IBM NETFINITY 3000

 e-business tools

Intel® Pentium® II processor (up to 450 MHz) / Up to 384MB SDRAM ECC memory / Prices starting at \$2,365

ALSO SEE NETFINITY SERVERS ON THE WEB AT WWW.IBM.COM/NETFINITY OR CALL 1 800 IBM 7255, EXT. 5018.



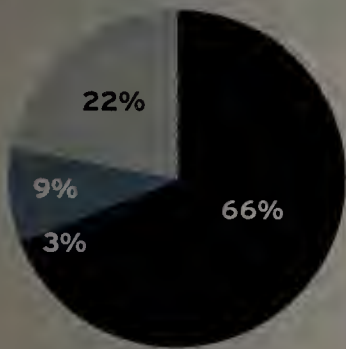
Software

Databases • Development • Operating Systems

Briefs

WHO BUYS ERP?

Where enterprise resource planning revenue comes from:



- U.S.
- Western Europe
- Asia/Pacific
- Other

Base: Survey of leading ERP vendors

Source: AMR Research Inc., Boston

Financial ERP

Rival midmarket application vendors Platinum Software Corp. and Solomon Software Inc. are making moves to expand beyond their roots in financial software.

Irvine, Calif.-based Platinum next week plans to release a Windows NT-based package that integrates its flagship financial applications with manufacturing and front-office software bought last year.

Pricing for the new Platinum Era 7.0 starts at about \$100,000.

And Findlay, Ohio-based Solomon last week shipped a new NT-based finance product that will be tied to distribution and project management applications, which are due out in the next six months.

The Solomon IV for Back-Office 4.0 software costs about \$30,000.

MORE WAREHOUSES

Average spending on data warehouse projects by U.S. companies:

1998	\$1.6M
1999	\$2.33M*

* Projected

Source: Cutter Information Corp., Arlington, Mass.

Database helps put out fires at Disney

► *Embedded functions make app easier to use*

By Stewart Deck

LET'S SET THE SCENE: The 911 line rings in the emergency dispatch center near Walt Disney World's Epcot Center in Orlando, Fla. Smoke has been spotted coming from Mr. Toad's Wild Ride. The dispatcher enters the caller's information onto a computer screen and determines that firefighters should check it out.

That's when an embedded database application kicks in to help the dispatcher figure out where the emergency is and whom to send.

Embedded databases often turn up in specialty applications, which automatically manage complex queries and data structures to keep end users from having to do it.

Embedded databases are particularly useful when regular-

Joe users need to input lots of data into a database but don't need to tweak the database once it's in place.

That particular application — called FirePrograms from Arakis Publishing in Inglis, Fla. — takes the data the dispatcher entered and transfers it to the embedded database, from Pervasive Software Inc., on which it

EMBEDDED DATABASES

runs.

Based on the data and the location of the caller, the software recommends how many and which trucks from the area's three firehouses should respond.

Tracking 21,000 alarms and 10,000 fire inspections per year requires a database that can handle plenty of detail, said Craig Loftin, manager of information services at the Reedy Creek Improvement District, the government authority that



Pervasive's embedded database helps speed dispatch times of Reedy Creek fire trucks, such as this one at Epcot Center

oversees Disney World (see story, page 61).

"We were trying to keep track of it all using an old FoxPro database," Loftin recalled. "We finally decided we needed a multiuser system with record locking that could run on a [wide-area network] between our three stations without bogging the network down."

Carolyn DiCenzo, an analyst at the Dataquest division of Gartner Group Inc., said Pervasive's embedded database is a

Database, page 61

PRICING SCHEMES

ERP vendors trim prices to broaden market reach

By Craig Stedman

SAVVY USERS should be able to get good deals on SAP R/3 and other corporate applications, thanks to the oldest vendor trick in the book: using price as a competitive weapon.

Companies such as SAP AG and Baan Co. are putting together new pricing schemes as they try to broaden their reach into more vertical industries and application areas. And users, analysts and even some vendors said list-price discounts are getting steeper — potentially as high as 70%.

That can pay dividends for new users and for current customers who are evaluating add-on data warehousing, business planning and front-office applications being developed by SAP and its rivals.

For example, Amoco Corp., which has about 15,000 SAP R/3 users, just bought the German vendor's new Business Information Warehouse software for future use in analyzing corporate data such as sales and profitability.

The price was right for the \$36 billion oil and gas producer, which also eyed third-party data warehousing products.

ERP, page 61

Scheduler helps steelmaker stand out

► *Bethlehem aims to be service leader in a commodity market*

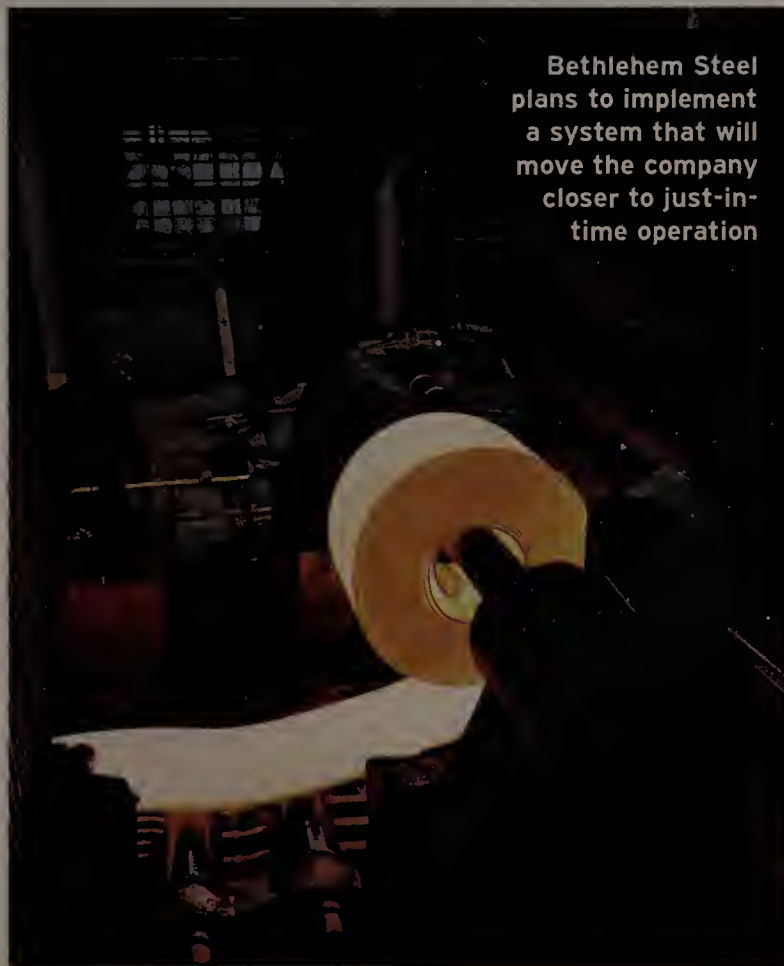
By Jaikumar Vijayan

IT'S DIFFICULT to be different in a sector where the products you make seldom change, the equipment you manufacture them with is horrendously expensive to replace and the pricing for your products is set by the industry.

That's why the \$5 billion Bethlehem Steel Corp., the second-largest steel manufacturer in the U.S., is doing everything it can to stand out in service.

During the next 12 months, the company plans to implement a new capacity planning and factorywide scheduling system that will let its steelmaking Sparrows Point manufacturing division in Maryland move closer to a just-in-time operation.

Steelmaker, page 61



Bethlehem Steel plans to implement a system that will move the company closer to just-in-time operation

Introducing The Q Your Entire Enter

Monday, 9:00 a.m.

KP11	Kindle Press - Confidential	TRXZ2356
Display Title Information		
ISBN:	0-767-54221-5	Qty in Stock: 865
Title:	So You Want to	Qty Consigned: 234
List Price:	\$31.95	Cost Each: \$5.41
Author Code:	PTC	
Status:	T	Sold to Date: 12585
Group:	7	Royalty Count: 12345
		Royalty Paid: \$2839.35
Reorder Level:	215	Current Sales: 5625
		Royalty Due: \$1293.75
Carton Count:	12	
Ctn Wt (lbs):	22.6	Royalty Rule: 0

quickest Way To Put prise On The Web.

Tuesday, 2:00 p.m.

Online help

Runs over the Internet

Image from database

Information from database

Custom graphical buttons

Information from host application

Microsoft Internet Explorer

Lookup Book

Rumbling In Saskatchewan
So You Want To Surf the Web? A Beginners Guide to the World Wide
The Master of the Maze
The Night of the Last Motorcade
There Came a Guru

Book Title: So You Want To Surf the Web? A Beginners

Author ID: PTC Name: Patricia Collingworth

Manuscript: 502 ISBN: 0-767-54221-5

Pages: 598 First Publication: 05/22/95

☒ Retail ☒ Wholesale ☒ Direct

Current Edition: 2

☐ Hard Back ☒ Paper Back ☐ Other

add save exit

Inventory Information

List Price : \$31.95 Cost Each : \$5.41 Sold to Date : 12,585

Royalty Paid \$2,839.35 Royalty Due : \$1,293.75 Qty in Stock 865

Qty Consigned : 234

What used to take years, now takes days.

With Opal™, you can quickly transform your legacy applications into secure, Web-enabled applications. And deploy them just as fast.

Of course, it may take some time for your users to recognize these legacy applications with their new multimedia interfaces that go far beyond HTML and Java. But in no time at all, everyone will appreciate these new



smarter, friendlier applications that are easier to deploy, and much easier to use and support.

Just think of all that you could do with technology like this.

For more information, call 1-877-GET OPAL, or visit www.cai.com/ads/opal.

Quick.



Opal™

Modernizing Legacy Applications™

CD-ROMs Absolutely Free!

Save Time and Keep Pace

**Call Today and
receive a Bonus
CD-ROM!**

**IT & The 21st Century
Corporation - Part One**

Dr. James Martin

**with Rapidly Changing
Technologies**

Call today and order one of the following **FREE** CD-ROMs

Java: A Guide for IT Managers

ActiveX vs. Java and CORBA: The Battle for the Enterprise

The Year 2000: What if You Are too Late?

The New CIO: Keys to Success

Understanding Web-Based Applications: HTML, Dynamic HTML, SSL & More

Choosing the Right ERP Vendor: SAP, PeopleSoft, Oracle, Baan

Phone 1-800-304-1425 x350

6801 Jericho Turnpike

Syosset, New York, 11791

tel: 1-516-921-5170 fax: 1-516-921-6134



Computer Channel, Inc.

Copyright 1998 Computer Channel, Inc. All rights reserved.

e-mail: info@compchannel.com

www.compchannel.com





ERP vendors make price cuts

CONTINUED FROM PAGE 57

"For SAP, it was aggressive pricing," said Steven Grossman, manager of SAP implementation at Chicago-based Amoco. "They made sure they were competitive." Grossman declined to disclose the discount Amoco received.

Retirement planning firm SunAmerica Inc. late last year settled on R/3 partly because of

the deal it was able to get from SAP, which is trying to expand into nonmanufacturing markets such as financial services.

Applications from PeopleSoft Inc. and Clarus Corp. also were in the running, and SunAmerica's selection committee was deadlocked on which way to go, said Roy Nakabara, vice president of cash services and R/3

project manager at the Los Angeles-based company. But SAP "came in best on price and support," he said.

Software pricing isn't always a make-or-break factor in purchases of R/3 and other enterprise resource planning (ERP) applications, analysts said. Business fit often is paramount, and consulting fees and other implementation costs can be three to 10 times more than the upfront license fees (see chart).

But pricing pressures are starting to hit vendors where it hurts. For example, PeopleSoft, in Pleasanton, Calif., last month warned that its revenue growth will likely moderate, partly because of more aggressive discounting by rivals.

"There's no question that we're putting competitive pressure on other vendors when we go into vertical industries where we weren't before," said Kevin McKay, CEO of SAP America

Inc. in Newtown Square, Pa.

But McKay said claims that SAP is discounting more heavily "are not well informed." Some R/3 buyers are paying lower prices because their projects are weighted more toward occasional users, who are charged less under SAP's tiered pricing scheme, he said.

DOLLAR SIGNS

Jim Shepherd, an analyst at AMR Research Inc. in Boston, said ERP vendors always have been big discounters. But price breaks are up about 10 percentage points across the board this

year, he said. "Regardless of what SAP says, they will discount to establish themselves in new industries," Shepherd said.

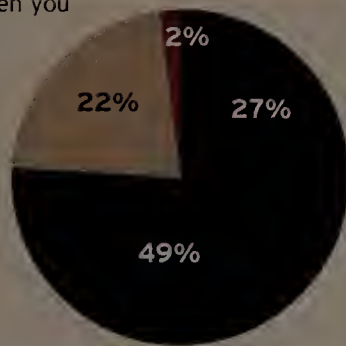
SAP also recently promised to come up with a new way of pricing Business Information Warehouse and other new applications that reach beyond R/3's back-office user domain [CW, Sept. 21].

And Baan last month announced new software packaging and monthly pricing starting at \$99 per user in an attempt to make its applications more attractive to midsize customers. □

DOES COST COUNT?

How does price rate as a factor when you evaluate packaged applications?

- One of the most important factors
- Important, but less so than functionality
- Not very important
- Not considered



Base: 51 IT and business managers at Fortune 1,000 companies surveyed in August; percentages have been rounded

Source: Forrester Research Inc., Cambridge, Mass.

Steelmaker boosts service

CONTINUED FROM PAGE 57

The latest move is part of a wider effort to cut inventories and streamline manufacturing processes, which stretches back more than five years, said Dominic Toriello, superintendent of production planning and scheduling at Sparrows Point.

"Traditionally, the steel industry has not been a very reliable [on-time] supplier of products," Toriello said. "In the past, the philosophy was taking on as [many] orders as you could and sorting them after you got them."

One result was overbooking and a tendency to carry loads of extra — and very costly — in-

ventory, Toriello added.

The global scheduling system Bethlehem is implementing will let planners schedule jobs better and execute orders on time, he said.

Such efforts could start to pay off for Bethlehem at a time when players in the U.S. steel industry say they're facing growing competition from cheap imports from Japan, Russia and Brazil.

TONS TO MANAGE

The global scheduler is based on a decision-support system called Rhythm from I2 Technologies Inc. in Irving, Texas.

The system uses capacity data, materials-work-in-progress data and order information from the various production units at Sparrows Point to plan and schedule production of the 3 million tons of steel that Bethlehem annually puts out for the construction industry and transportation container makers.

The amount of time it takes to process an order depends on the work involved. Work with narrow, light products, for instance, takes longer to process than heavy, wide workloads.

Previously, planners scheduled work based on historical data on the tonnage of steel processed by a unit during a particular period, a method that didn't account for variances in workloads.

The I2 system will work by first analyzing information at the finished product stage and figuring out how the finishing mill needs to be optimized.

It then moves a step backward in the production process and schedules the previous manufacturing unit to optimally feed the final stage. The process is repeated all the way through the production chain.

An average engagement at an integrated steel manufacturer can run from \$2 million to more than \$20 million, said David Fischer, a vice president at I2 in Dallas. But "each day of reduced inventory is huge [in] dollars saved," he added. □

Database helps Disney

CONTINUED FROM PAGE 57

good choice for users looking for a small, robust database application because users get tailored, ready-built applications faster than they could put them together themselves.

And Tracy Corbo, an analyst at Cahners In-Stat Group in Boston, said embedded databases let users "focus on their business needs and purchase an application . . . rather than trying to build [the whole thing] from the ground up."

INSTALLATION

Last winter, the Reedy Creek Improvement District began to implement the new \$46,000 system and had it running in June. It operates on a Dell Computer Corp. PowerEdge Server running Windows NT 4.0.

The new system's reporting capabilities let the department

chiefs see what alarms and other activities are going on and helps them make decisions about new equipment and personnel distribution.

Loftin said implementation took longer than he originally planned because they tried to put too much into the system's address database.

"If I had to do it over again, I would have spent more time helping figure out exactly what to put in the address database, and I would have forced the department to use it sooner and run some more test calls," Loftin said.

The program eventually will tie into the department's mapping program and a Global Positioning System to let dispatchers see exactly where trucks are along the route to the scene, Loftin said. □

A dream of utopia

During the early 1960s, Walt Disney bought up so much property in Orange and Osceola counties that the state of Florida had to create a governing body to oversee public services, including waste collection, flood control, civil engineering planning, fire protection, tax collection, pest control and building-code inspection.

So in 1967, the Reedy Creek Improvement District was established as a governing body for the Disney property (about 25,000 acres, 38.6 square miles), plus 450 acres owned by the state, 24 privately owned acres and 2,118 acres owned by the district itself.

It has three fire stations, seven ambulances and two tower trucks.

Making its work slightly easier is a set of automatic sprinkler systems coupled to a network of smoke and heat detectors throughout the Disney complex. "These monitoring systems and strict building codes have kept our structural losses due to fire to less than \$100,000 in the last seven years — the lowest of any community of our size in the world," said Craig Loftin, manager of information services for the Reedy Creek district.

But sprinklers were little help two weeks ago when a fire broke out in Disney's remote landfill area, miles away from the park. "There weren't even hydrants out there," Loftin said. "We had to keep running pumper trucks filled with water out there, and the fire burned for two days." — Stewart Deck

NEW PRODUCT

VINCA CORP. has announced OffSite Archive for NetWare, software that lets users send copies of backup data to remote servers over low-cost wide-area network lines.

According to the Orem, Utah, company, the software performs an initial synchronization between an on-site NetWare server and a remote NetWare server. Subsequent data changes are continuous-

ly transmitted over T1 or phone lines to maintain the synchronization.

In the event of a primary server failure or disaster, the remote server can be moved back in-house or to a networked hot site for operation resumption. Offsite Archive for NetWare costs \$3,999.

Vinca
(801) 223-3100
www.vinca.com

hp and j.d. edwards = adaptability

Business is constantly changing. In order for your business to keep up, your enterprise system needs to adapt. HP enterprise systems combined with J.D. Edwards® SCOREx supply chain solutions allow you to better manage your changes one step at a time — giving your business what's necessary for growth. For more information, visit www.hp.com/go/jd_edwards.

JDEdwards
J.D. EDWARDS

J.D. Edwards is a registered trademark of J.D. Edwards & Company. ©1998 Hewlett-Packard Company

Servers & PCs

Large Systems • Workstations • Portable Computing

Briefs

Information appliance**
worldwide shipments

1997 13M

1998 16M*

2002 55.7M*

* Projected

** Non-PC Internet access devices

Internet game devices**
worldwide shipments

1998 848,000*

2002 15M*

* Projected

** Sony, Sega, etc.

Based on vendor shipments and estimates
Source: International Data Corp.,
Framingham, Mass.

Motorola smart cards

Motorola Inc. in Schaumburg, Ill., has introduced smart-card products intended to help companies and agencies quickly create smart-card applications in the financial, telecommunications, transportation, education, government and health care fields. The M-Smart line includes readers, cards, operating systems and development kits.

PalmPilot still tops

3Com Corp.'s PalmPilot handheld device is the most popular such device in its class, according to a new survey by International Data Corp. (IDC), a sister company to Computerworld in Framingham, Mass. Its share rose from about a third of handhelds sold last year to 41% in the first half of this year. Windows CE devices trailed far behind. IDC expects total handheld sales to grow from about 7.4 million this year to about 11 million next year.

EMC's record profits

Hopkinton, Mass.-based EMC Corp. has reported that revenue for its 1998 third quarter reached a record \$1 billion. The high-end storage vendor also posted a 52% increase in profits, surpassing Wall Street estimates. Storage management software and Fibre Channel systems were high-growth product areas.

Publishing: Mac nation

► Output, support
concern NT watchers

By Galen Gruman

ALTHOUGH MANY publishers are exploring the use of Windows NT workstations to do layout and prepress work, most in this traditional bastion of Mac users have found they must still rely on the Macintosh.

TrendWatch, a Harrisville, R.I., research firm, found that 12% of commercial printers, 28% of service bureaus and 22% of separators plan to buy NT systems. But TrendWatch analyst Jim Whittington noted that most companies plan to buy just a few NT systems, vs. many Macintoshes.

Today, the number of NT users in publishing is so small that the main software vendors in that market — Quark Inc. in Denver and Adobe Systems Inc. in San Jose, Calif. — don't bother counting them, according to spokesmen at both companies. However, both companies have Windows 95 and NT versions of their products, anticipating

WHERE MACS MAKE SENSE

Comparing total cost of ownership and payback of Macintosh and Windows NT systems in graphics and publishing work:

	Windows	Macintosh
Average TCO*	\$17,154	\$14,943
TCO* per program	\$2,144	\$1,067
Payback for a new system	12.58 months	4.59 months

* Over a three-year period

Base: Summer 1997 study of 30,226 media professionals

Source: Gistics Inc., San Anselmo, Calif.

some migration from Macintosh to Windows as well as new Windows-based customers, such as corporate creative-services departments, that don't need the highest-quality output.

But NT's presence will increase in publishing because "IT departments [are] driving the push to add Win boxes," said Kate Balch, manager of technology services at the Printing Industry Association in Alexandria, Va.

NT is making inroads as a special-purpose device, mainly to run some image transformations in Adobe's Photoshop, do some rendering tasks and act as a file server, analysts said.

"We need to be able
to troubleshoot and
fix our problems."
— Brad Mintz,
McCann-Erickson

Net managers aim to rein in storage

Key benefits of Fibre Channel
storage-area networks (SAN):

- Improved availability: Data is stored from servers and is available via alternate paths, even when servers go down
- Improved performance: Throughput isn't limited to server performance, unlike server-attached storage
- Easier centralized management: Consolidating server-tied data into shared SAN enclosures reduces management time and costs by reducing the number of data stores to be managed
- Practical data transfer, vaulting and exchange with remote sites: Connections can span 10km, making inexpensive disaster protection (remote clusters and mirrored arrays) more practical

Source: Strategic Research Corp., Santa Barbara, Calif.

► Products on the way to make
storage-area networks manageable

By Nancy Dillon

RICHARD BRENISER recently worked eight consecutive 100-hour weeks to help implement a Fibre Channel storage-area network (SAN) at his Santa Monica, Calif.-based video post-production house.

He has since managed to pare his workday to a modest 12 hours. But to get out the door before rush hour, not after, Breniser said he needs SAN management software similar to a mininetwork management framework.

Hewlett-Packard Co. in Palo Alto, Calif., announced plans last week for such a product: HP OpenView SAN Manager.

"Right now, I can control read and write on my SAN, but I don't have any strong monitoring tools," said Breniser, the technical director at FilmCore "My ultimate goal is to integrate all aspects of network management in one place,

Net managers, page 65

CHIP TECHNOLOGY

Intel looks beyond Pentium

By April Jacobs

THE 32-BIT Xeon processor is just beginning to break in to the corporate mainstream, and the 64-bit Merced is two years away. But Intel Corp. is already describing the successors to those chips, which were designed for high-end workstations and servers.

Intel plans to deliver Xeon's 32-bit successor, code-named Foster, in 2000. Merced's 64-bit successor, McKinley, is due in 2001.

Intel officials said the chips will have at least twice the performance of their predecessors, especially in number-crunching, design and graphics. Intel offered the road map to give end users who look to the latest and greatest processors a head start in planning to use the technology.

The jump in performance that the 64-bit McKinley provides may help Intel and PC server makers use Windows NT to carve more market share from the Unix market, analysts said.

FUTURE NEEDS

And although the new chips are far off, some users already are anticipating the need to have computers based on them.

"We have a very big database environment in the credit-card business, and we're going to need the best CPU resources we can get to support our applications," said Dave Geiver, information technology manager at First Premier Bank in Sioux Falls, S.D.

Intel, page 65

Intel's processor
plans include:

Name	When	Architecture
Foster	2000	32-bit
McKinley	2001	64-bit

Publishing: Mac nation

CONTINUED FROM PAGE 63

haps in 2003, that NT may match the Macintosh's capabilities, said Michael Moon, an analyst at Gistics Inc., a research firm in San Anselmo, Calif. He said NT's main flaws are the following:

- NT-generated PostScript output files

have seven times more errors than Macintosh-generated files, Gistics' studies showed.

- Color matching on NT isn't as reliable as on the Macintosh.

- Windows' font handling (especially for

TrueType) invites output errors.

- There is no NT version of AppleScript, a widely used Macintosh tool to automate tasks.

- Most plug-ins to QuarkXPress, the industry-standard publishing software, have no NT version. Plug-ins add functions such as special effects and press imposition.

- Most service bureaus are Macintosh-based and don't know how to properly

handle Windows-based files.

But NT 5.0 will address some of the font, output and color-matching issues, a Microsoft spokesman said.

McCann-Erickson Worldwide Inc., a New York advertising agency, was also very concerned about support.

"We're a 24-hour operation, and we need to be able to troubleshoot and fix our problems and not wait for someone to come down from IT," said Brad Mintz, manager of graphics services for the firm's Creative Studio group. He said Mac users are able to take care of themselves.

NT already meets some users' needs. For example, Printing Corp. of America in Timonium, Md., is impressed with its Intergraph NT workstations, said information systems manager Bill Downey. The company specializes in fast production of low-volume color publications, which are usually simpler than those done by traditional Macintosh-based printers.

Downey said he's enthusiastic about the potential of the new Xeon Pentium II processor and forthcoming 64-bit Merced IA-64 architecture. "The speed is going to be phenomenal," he said. But Moon said the PowerPC Altivec processor, due next year, will increase Macintosh speed as much as 16-fold. □

"By partnering with Cap Gemini America and utilizing their tools, methods, people, and expertise, the Blue Cross Blue Shield of Michigan Change of Century Mainframe Applications project is projected to be complete months ahead of schedule. By utilizing the highly automated UDM for testing, we have proceeded at a faster rate than we would have without such a tool."

Progress to date has been

remarkable."

remarkable

Gerald Mallon
Blue Cross Blue Shield of Michigan
Change of Century Project Manager

YEAR 2000 RENOVATION AND TESTING SERVICES

If you can't say the same about your Y2K project, it's time to see what Cap Gemini America's Application Renovation CenterSM can do for you.

We combine smart technology and end-to-end integration to deliver consistent, high-quality results on timetables that are nothing less than amazing.

Whether you need to review the status of your Y2K program; automate your Y2K renovation; check the quality of your renovated code; or conduct fast, efficient Y2K testing, Cap Gemini America has the toolsets and services to help you get the job done. That's a good reason to add us to your Y2K team.

Submit a request for quote for your Y2K renovation or testing project and we'll respond within 48 hours (two business days)*.

Visit www.usa.capgemini.com/y2k or call 1-888-Y2K-TODAY for more details and comments from other satisfied clients.



* 48-hour quote available for fixed-price testing or renovation on any single COBOL MVS application from 750,000 to 2 million lines of code. Quotes shipped via Federal Express within 48 business hours (2 business days) after receiving complete information. Offered by Cap Gemini America only.

NEW

PRODUCTS

INTERGRAPH CORP. has announced the TDZ 2000, a Windows NT-based workstation for digital video production.

According to the Huntsville, Ala., company, the workstation is optimized to handle nonlinear editing, capture, compositing and special effects. An entry-level system includes a 333-MHz Pentium II processor from Intel Corp., 128M bytes of memory, a 4.3G-byte UltraWide SCSI disk and integrated 10/100 Base-T networking. Pricing starts at \$2,900.

Intergraph
(256) 730-2000
www.intergraph.com

IDOT.COM INC. has announced the 300K6-2, a PC with a 300-MHz K6-2 chip from Advanced Micro Devices Inc.

According to the Austin, Texas, company, the system has 32M bytes of synchronous dynamic RAM, a 4.3G-byte hard drive, a 4M-byte graphics card and a 32-speed CD-ROM. It's bundled with Windows 98 and includes four Peripheral Component Interconnect slots, one Industry Standard Architecture slot, two serial ports and two Universal Serial Bus ports.

The system costs \$699.

IDOT.com
(512) 684-5000
www.idot.com

Intel looks beyond the Pentium

CONTINUED FROM PAGE 63

Geiver said the company is in the process of moving to a Microsoft Corp. SQL Server database from a Microsoft FoxPro-based system.

The new SQL database will increase the bank's processing requirements, as

will a business plan that includes nearly doubling First Premier's employee head count, he said.

The business case at First Premier is clear: Faster performance means an increase in production from employees, as

they process thousands of applications and accounts. "As soon as the 64-bit systems are certified, I definitely see us wanting them," Geiver said.

But, for the lower-end end user, the technology probably is nine months to one year behind the chip release dates, according to John Dunkle, an analyst at Workgroup Strategic Services Inc. in Portsmouth, N.H.

That's because, as usual, companies

are likely to spend the extra money on high-end users to give them the best technology to get their jobs done, but will hold off for users where it isn't necessary.

Intel isn't talking pricing yet, but analysts familiar with the company said these new chips will likely debut in systems that start at about \$3,000 for the typical workstation/PC and move upward in the server market. □

Net managers

CONTINUED FROM PAGE 63

including 10/100Base-T and Fibre Channel. . . I want to get up each day at 8:30 [a.m.], not 5:30."

A Fibre Channel SAN is like a back-end LAN that connects servers and clients with shared storage devices. It can act as a single loop or interconnect via switches and gateways. SANs are possible with other buses, such as Escon, but Fibre Channel is favored for its improved distance and transfer rate (10km and 100M byte/sec.).

Breniser's SAN comprises three An-dataco disk enclosures, a Windows NT server, seven workstations, a tape library and two switches.

HP's OpenView SAN Manager is due by next July and will work as a module for HP's OpenView management framework. The first version promises the ability to map SAN topologies, track device health and launch device-specific configuration software; but it will work only with HP's Fibre Channel hardware. Support for non-HP devices and SAN reconfiguration will follow.

Lack of "a normal management framework has been the single-item inhibitor to SANs," said Michael Peterson, an analyst at Strategic Research Corp. in Santa Barbara, Calif. He said HP's move is the first in the framework market.

Although most high-level SAN management products aren't due for months, several SAN middleware applications are available today. An example is the Shared Storage Option (SSO) announced last week by Seagate Technology Inc. in Scotts Valley, Calif. SSO works with Seagate's Backup Exec backup software and mediates the sharing of tape backup resources among servers on a Fibre Channel loop. Before this type of middleware, such sharing required data movement over the corporate LAN.

"We have a significant amount of backup traffic on our Ethernet network, and with [SSO] it should be all but eliminated," said Peter Buttros, senior storage architect at AT&T Corp. in New York. Buttros' group handles backup for up to 116,000 clients. He said SSO is planned for deployment on "hundreds, maybe thousands" of NT servers.

"We expect tremendous savings from [SSO]," Buttros said. He said SAN-based backups aren't limited to off-peak times and give him more flexibility with his staff. "And from the support aspect, [sharing tape] means fewer products, less training and less purchasing." □

You always said your intranet would be an essential corporate resource.

Prove it with Dow Jones Interactive.



Introducing Dow Jones Interactive Intranet Toolkit.

Dow Jones Interactive Intranet Toolkit turns your corporate intranet into a high-traffic intelligence center. This turn-key solution allows you to integrate valuable external content from Dow Jones with internal data on your intranet so co-workers have fast, password-free access to relevant news. Most important, it gives them a reason to keep coming back for more!

Solve the two major problems faced by every intranet administrator:

- **Content.** Sources include the world's top newspapers, newswires and the publications that matter most to your business.
- **Technical Resources.** After a simple set up, the toolkit requires virtually no attention, eliminating hours of maintenance time.

Effortlessly post the news that's relevant to your company.

The Intranet Toolkit is a Java-based application that resides on your NT or Solaris server. It easily posts XML-formatted news and information—drawn from Dow Jones Interactive, the world's most comprehensive business intelligence service—on your intranet.

The toolkit's customizable publishing system can run unattended, or you can use powerful editorial interfaces to preview and attach commentary to appear beside articles.

Just download the free toolkit and complete the registration. In no time, valuable, targeted news and information will flow to your intranet!

See For Yourself
With A Free 30 Day Trial*



Download the FREE Intranet Toolkit at
<http://ip.dowjones.com/toolkit>

For 30 days, your intranet will be energized with custom news from a selected set of premier sources*—including *The Wall Street Journal* and late-breaking newswires.



Dow Jones Interactivesm
Intranet Toolkit

<http://ip.dowjones.com/toolkit>
800-369-7466

©1998 Dow Jones & Company, Inc. All rights reserved. *Details of the free trial offer and the sources included can be found at <http://ip.dowjones.com/toolkit> or by calling 800-369-7466. DJI-421

DOWJONES



Network manageability.

(That's a fancy way of saying our computers

are built to work with your business.)

Whether you need to set up an entire network — or add to an existing one — our systems will be built to your specifications, including network-ready desktops, departmental servers and value-class portables.

- Stable platforms allow for upgrading and expanding.
- Full range of affordably priced, reliable systems.
- 24-hour service and support: online, on-call or by fax.

Let's talk about servers — booth #L1230 at Comdex, Las Vegas.



Every Gateway client is unique, and so is every Gateway™ system. These systems are just examples of what we can build for you.

Solo® Portable PCs

2500LS Value-Class Portable

- 13.3" XGA TFT Color Display
- Intel® Pentium® II Processor 233MHz with 512K Cache
- 32MB SDRAM (expandable to 160MB)
- 2MB 128-Bit Graphics Accelerator
- Integrated 8X min/20X max CD-ROM Drive
- Integrated 3.5" Diskette Drive
- 4GB Ultra ATA Hard Drive
- 12-Cell Lithium Ion Battery & AC Pack
- USB Ports, CardBus & Zoomed Video Support
- NTSC/PAL Video Output
- Integrated 16-Bit Sound & Stereo Speakers
- EZ Pad® Pointing Device
- Carrying Case
- V.90 Windows® Modem¹
- Microsoft® Windows® 95
- MS® Office 97, Small Business Edition plus Bookshelf® 98, LapLink® V. 7.5 & McAfee® VirusScan
- SM BIOS 2.1 & Intel LANDesk® Client Manager 3.3
- Gateway Gold Service³ for Portable PCs

\$2449

E-Series Network-Ready PCs

E-3200 400 Integrated Desktop

- Intel Pentium II Processor 400MHz with 512K Cache
- 96MB 100MHz SDRAM
- EV700 .28 Screen Pitch 17" Monitor (15.9" viewable)
- ATI RAGE PRO TURBO™ 2X AGP w/ 4MB
- 6.4GB SMART II Ultra ATA Hard Drive
- 13X min/32X max CD-ROM Drive
- 3.5" Diskette Drive
- Integrated 10/100 Ethernet with Wake-up On LAN
- Highly Serviceable, Convertible Case
- 104" Keyboard
- MS IntelliMouse® & Mouse Pad
- MS Windows 95
- DMI 2.0 Compliant
- Intel LANDesk Client Manager 3.3
- Gateway Gold Service³ for E-Series PCs

\$1699

ALR® Series Servers

ALR 8200 Department-Class Server

- Intel Pentium II Processor 350MHz with 512K ECC Cache
- SMP-Compliant Supporting Up To Two Pentium II Processors
- 128MB ECC 100MHz SDRAM (expandable to 1GB)
- 4GB Ultra 2 SCSI 7,200 RPM Hard Drive & Integrated Ultra 2 SCSI Controller
- 13X min/32X max IDE CD-ROM Drive
- 3.5" Diskette Drive
- Integrated Intel 10/100 Twisted Pair Ethernet Adapter
- Five PCI, One ISA, One Shared PCI/RAIDPort and One PCI/ISA Slot
- Four DIMM Slots
- 32-Bit PCI Graphics with 2MB DRAM
- Thirteen-Bay Server Tower Case with Optional Dual 400W Redundant Power Supplies, Includes Seven External Bays (Five 5.25" and Two 3.5") and Six 3.5" SCA Bays (requires SCA drives)
- 104" Keyboard & Mouse
- ALR InforManager™ Management System
- Gateway Gold Service³ for ALR-Series Servers
- FCC Class A Emission Standard²

\$4099



Let's talk about your

Gateway™

www.gateway.com

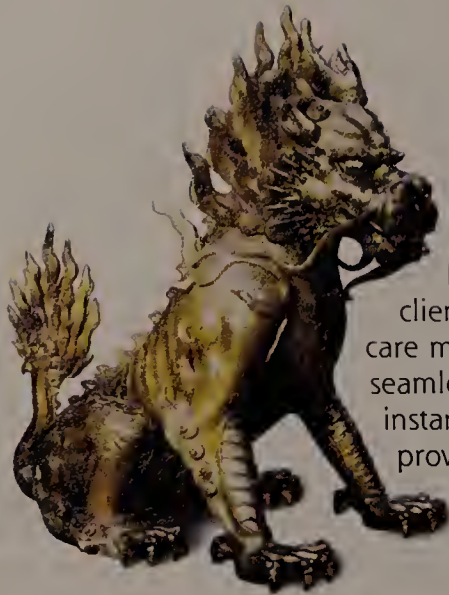
fax: 605-232-2716

© 1998 Gateway 2000, Inc. All rights reserved. Gateway and the Gateway stylized logo are trademarks of Gateway 2000, Inc. Not all Gateway systems contain the Pentium II processor. The Intel Inside Logo, Intel, LANDesk and Pentium are registered trademarks of Intel Corporation. All other brands and product names are trademarks or registered trademarks of their respective companies. Some products and services may not be available for all international locations. Many Gateway products are custom-engineered to Gateway specifications, which may vary from the retail versions of software and/or hardware in functionality, performance or compatibility. All prices and configurations are subject to change without notice or obligation. Prices do not include shipping and handling or any applicable taxes. All prices in U.S. dollars. 1. Maximum data transfer rate dependent upon certain variables, including particular modems with which you are communicating, telephone lines, communications software and communications protocols. 2. FCC Class A products may not be sold for home use. 3. Call 1-800-GATEWAY or write to us at Gateway Terms & Conditions, P.O. Box 1951, North Sioux City, SD 57049-1951 for a free copy of our limited warranty, on-site service agreements, and installation agreements. If your Gateway technician determines an on-site visit is necessary, on-site service will be provided for product purchased and located in the continental United States, Alaska, Hawaii, Puerto Rico and Canada (excluding mice, keyboards, monitors and Solo portables). On-site and installation services are administered by PC Technology Services, Inc. See agreements for specific terms and limitations.



call 888-888-0382

It's baaaaaaack: The new COBOL.



"Relational DBMS and COBOL"

may sound like an oxymoron but the Tatung Company, one of the largest in the Republic of China, is using both in a hospital client/server system that delivers better patient care more efficiently. ACUCOBOL™-GT applications seamlessly send SQL queries to a Sybase DBMS and instantly retrieve patient histories, as well as providing easy access to portions of the database to accountants, purchasing agents and other employees. The prognosis is very healthy.

Ben & Jerry's Homemade, Inc. found that the real scoop

on cross-platform compatibility isn't java, it's ACUCOBOL-GT. They moved 460 programs and 1,000 screen components from a Novell Network on PCs to a new computer over a weekend. ACUCOBOL-GT was the clear choice because it runs on over 600 platforms.

Coffee Ole™ anyone?



The "Next Big Thing" for Web publishing is COBOL, and in fact,

our ACUCOBOL-GT plug-in. Clients just install it in their Netscape or Microsoft browser, then can run your ACUCOBOL-GT applications from a hyperlink or embedded in your page without a single line of new application code. It's an incredibly fast and efficient way to provide your employees, distributors and customers with access to order entry, inventory or other databases. Getting on the Web doesn't have to get hairy.



Which came first?

Ask CSD (UK) and

they'll tell you exactly when the chickens and the eggs (not to mention the kippers, frozen peas and other products in our food chain) got to or will arrive at your favorite supermarket or bistro. When it came time to update their distribution software, they switched to ACUCOBOL-GT because it provided open access to relational DBMSs from Oracle and Informix, and made it easy to create the more than 500 GUI screens their users required. And now everything is sunny-side up.



Actually, it never went away.

There are more lines of COBOL running than any other language, with billions of lines added every year.

And now with ACUCOBOL™-GT you can move those applications into the new millennium easily, often without changing a line of your current application code.

Want a modern GUI?

Just add it to your existing applications with our ACUCOBOL-GT WYSIWYG screen painter, using the same "widgets" you find in VB and other front-ends.

Web publishing?

It's easiest with ACUCOBOL-GT. Just add a hyperlink to your application or embed it in your page, then have your clients install our plug-in for their Netscape or Microsoft browser and you're done.

Relational DBMS access?

Utterly seamless with Acu4GL™.

It executes COBOL I/O operations by invisibly generating SQL to get the answers you need, and supports identical source code across hardware platforms and RDBMSs including Oracle, Informix, Sybase and SQL Server.

Cross-platform capabilities?

We were cross-platform when Java was still a bean, and today ACUCOBOL-GT runs applications unchanged on over 600 UNIX and Windows platforms.

Which all adds up to the fact that you can enhance your users' interaction while reusing code you know is reliable because it's been running for years — your COBOL code, the ultimate reusable resource. Everyone from your maintenance staff to your CEO will love it.

There's more, so check out the details on our Web site or call today and let us give you the whole story.

It's the new COBOL. ACUCOBOL-GT.

ACUCORP™

(800) 262-6585 • (619) 689-4450
http://www.acucorp.com
theNewCobol@acucorp.com

Managing

KRAFT'S 5% SOLUTION

Kraft Foods' retention strategy focuses on community building and personal development. The result: An IT group with a turnover rate of just 5%

By Kathleen Melymuka

**"Community
... that's the
magic
ingredient
I've grown to
understand."**

**— Jim Kinney,
Kraft CIO**

oney isn't what it's all about," says Margaret Schweer.

She should know.

As director of human resources for information systems at Kraft Foods Inc., Schweer has had a hand in knocking down the annual information technology turnover rate from a respectable 9% or 10% to a stunning 5%.

Schweer says Kraft did it by focusing on what IT people really want: to develop their technical, business and leadership skills; to know where they're going in the company; to try things new and challenging; to have a chance to contribute regardless of rank; and to be part of a community of mutually supportive achievers.

"I don't think there's one thing that keeps people," says Dave Diedrich, director of integrated systems services

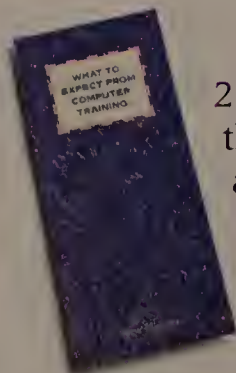
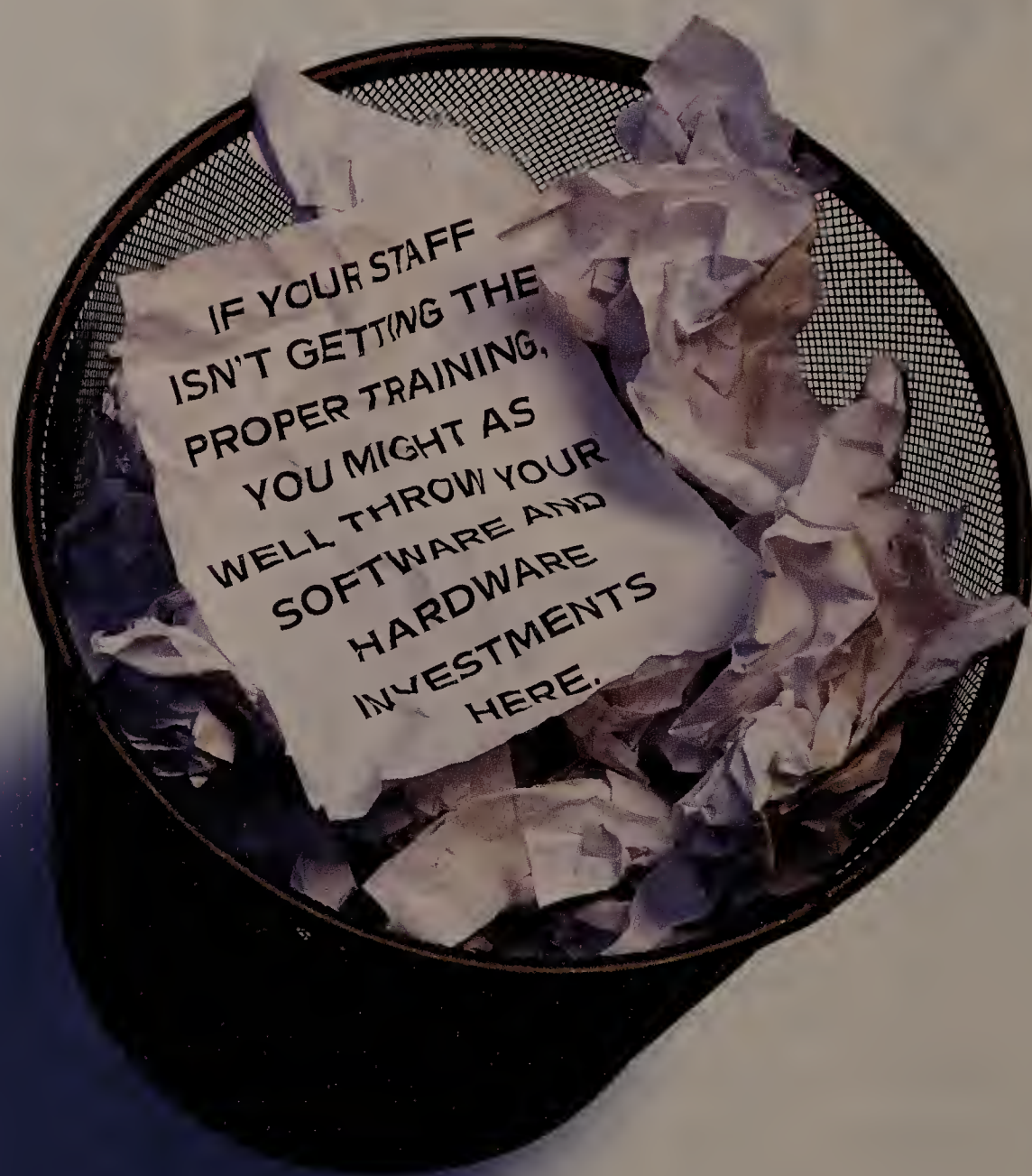
at Kraft. "I think there are 50 things that work together to show people we care about them. If you have that situation, why are you going to leave it?"

That approach works, says Brad Jameson, a principal at Fought, Jameson Associates, a Chicago recruiting firm that has worked with Kraft for years. "Their numbers are great, especially with a lot of companies up in the 20% [turnover] range," he says.



Kraft CIO Jim Kinney (right) teams up with Jeff Deutsch, a Kraft business consultant, in a volleyball game.

MARC BERLOW




According to a Gartner Group study, employees without formal training use less than 25% of their applications. On the other hand, trained users can increase productivity more than 165%. And those numbers can make a big difference next time you need to get a budget approved.

As the world's largest network of authorized training centers, with more than 200 locations around the globe, New Horizons Computer Learning Centers® offer more desktop and technical classes than anyone else. Our professional instructors are rated by every student, every day. And our help desk is available to support you 24 hours, 365 days a year.

To see how our guaranteed training can make your technology investments pay off, call 1 800 PC LEARN anytime or visit www.newhorizons.com for your free guide. **CHOICES FOR THE REAL WORLD.**

© 1998 New Horizons Computer Learning Centers. All trademarks are the property of their respective owners.


New Horizons®
Computer Learning Centers

KRAFT'S 5% SOLUTION

CONTINUED FROM PAGE 69

"The key things that keep people tend to be the intangibles," Jameson explains. "We find a lot of young people want to learn the business. Kraft puts a lot of emphasis on that. Their business is very tech-intensive and they're on the leading edge, so their people can continue to grow."

Kraft's 980 full-time IT employees seem to agree. "I haven't had one negative day at Kraft," says Kurt Duncan, an associate business analyst who recently graduated from Indiana University. "I'm working on very new technology that's constantly changing and expanding. I have a new focus every day, and I get to interact with a lot of different people."

"You know that you're important to the company," says Lori Etelamaki, associate business manager for sales information systems. "I get a lot of special projects, and that tells me I'm of value. They let me explore other opportunities. I like that."

Schweer says retention has always been a hot issue at Kraft, but in the past few years IT's human resources function has become more sophisticated in its understanding of what effective technical community members need, how and why they choose employers, what they want from careers and what a retention-conducive environment looks like.

Kraft's success starts with a partnership between IT and human resources. "I've given a lot of attention to educating HR on the uniqueness of the challenges we have," says Senior Vice President and CIO Jim Kinney. "And I have [HR] specialists who understand these issues very well. [Schweer] has become our champion within the HR function."

RECRUITING

The first ingredient for retention is to hire the right people. Kraft uses its college internship program to attract eager learners with interpersonal skills and a keen interest in business. "Our interns contribute," says Etelamaki, who also recruits on campuses. "They learn the business, they're exposed to different technologies, and they're responsible and accountable right away. We're known for that on campus."

About 70% of interns who are subsequently offered jobs accept.

For college recruiting, a cadre of IT managers and recent hires descends on the campus. About the only people not in evidence are human resources folks. "I don't go on campus," Schweer says. "It's [IT] people [whom students] want to talk to. I don't get between them."

Candidates come to Kraft for their second interviews in groups of about three dozen for a day and a half of receptions, corporate and cultural orientations,

interviews, technical demos and esprit de corps building. "They physically engage with everybody from Jim Kinney to entry level," Schweer says. "The people you work with are a very important part of why you choose to come here."

DEVELOPMENT

Once hired, new employees start down the never-ending road of development. "We give a lot of attention to development," Kinney says. "We have trained our managers on how to set up objectives, provide ongoing feedback, conduct performance reviews and set development objectives. And we check on that; we don't make that an empty exercise."

The IT career path at Kraft provides both technical and managerial opportunities; everyone has access to an IT

are just as likely to ask me about going on for an MBA as they are to ask me if they can go get an Oracle class," Schweer says.

And managers feed ambitions. "I don't limit them to technology," Wilson says. "If they're working on a finance system and they want to figure out the basics of finance, I say, 'Go take a finance course.' I'm keeping them growing."

LEADERSHIP

A new effort to keep people growing at Kraft is its IS Leadership Program, which is focused on developing a network of midlevel IT leaders who understand the business.

Each participant works with an executive mentor through the one-year

people to want to change.

Now postings include a discussion of the technology, the specific application, the project and the applicant's place in it, client interaction and growth opportunities.

The commitment to movement comes through in the ranks. "If I want to try something else, they're right there for me," Etelamaki says. "I always have another challenge."

CONTRIBUTIONS

Everyone's contribution is valued. A month after Duncan started at Kraft, for example, he presented Schweer with a two-page list of ideas on how to improve recruiting. Schweer opened the way for him to discuss his ideas with the appropriate people, and ever since, she says, "we've been busy implementing Kurt's thoughts."

And Wilson says, "It doesn't matter what your level is, your ideas are always accepted. I think that's one of the reasons it's easy to keep people."

COMMUNITY

IT folks at Kraft say the top reason they stay is the sense of family. "We've really worked on developing a sense of community," says Kinney, who has a standing noontime basketball game with IT employees. "That's the magic ingredient I've grown to understand."

"If you don't have a community," Wilson says, "they're going to leave for more money because there's nothing that's keeping them here."

Because IT people stay at Kraft, they bring a breadth of experience to solving business problems, and they develop relationships with businesspeople that give an invaluable boost to their effectiveness as change agents, Schweer says.

Of course, success such as Kraft's presupposes the basics. Compensation is competitive, although not leading-edge. The company takes work/life issues seriously, providing flexible hours, telecommuting and part-time options when employee circumstances require it. The campus is new and attractive, with perks that include a company store and a health club. And dress is casual.

"There are no secrets [to retention success]," Kinney says. "You have to recognize what kind of people IT professionals are. They want challenging assignments, want to be part of delivering something of value to the business and want the opportunity to improve their skills as time goes by. You really have to practice what you preach in terms of giving them the chance to maximize their own capabilities and performance."

"It's a full-court press." □

Melymuka is Computerworld's senior editor, management.

Kraft's retention recipe:

- ▶ Internship program stresses IT/business immersion, accountability.
- ▶ Entire IT community interacts with job candidates.
- ▶ Comprehensive, multimedia IT tool kit guides career development with road maps from job to job.
- ▶ Technical and business training encouraged, tuition reimbursement available.
- ▶ Comprehensive IT leadership programs at middle and upper levels.
- ▶ Hiring from within and intracompany movement encouraged, facilitated.
- ▶ Ideas solicited, accepted at every level.
- ▶ IT community building encouraged.

tool kit posted on Kraft's intranet. The site provides development tutorials, links to job postings, training courses, division sites (such as Maxwell House, Kraft Cheese and Oscar Mayer Foods) and function sites (IT, human resources, finance). Those sites discuss the skills and competencies required in their area as well as in specific positions and specialties.

"People know what they will need for the next level," says Debra Wilson, IT director for the pizza division.

To reach the next level, Kraft encourages IT employees to devote 10 days each year to development activities. Kraft offers an extensive IT and business training curriculum and also offers a tuition reimbursement program. "The kind of people who are attracted to Kraft

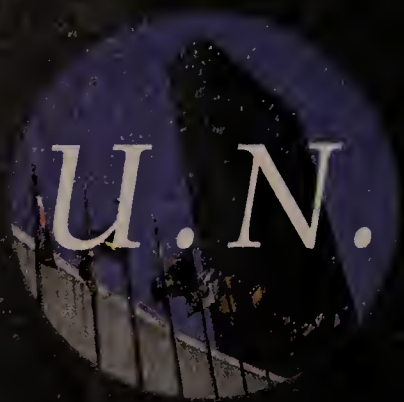
program, which includes about 30 days of activities. There are seminars on leadership issues, work experience in various parts of the business, outside conferences and discussions of philosophy, technology and business.

Development continues at the senior level, where managers attend outside leadership development programs, such as those sponsored by the Society for Information Management.

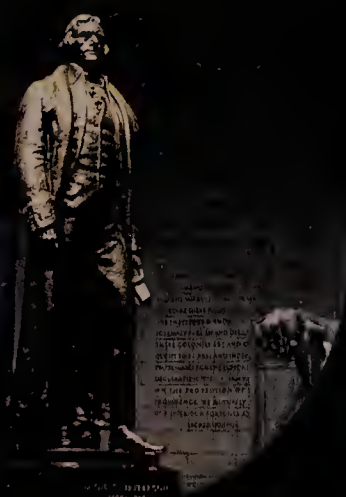
MOVEMENT

Kraft is committed to promoting from within, and Schweer, who moved to her job two years ago after 12 years in Kraft human resources, initially was dissatisfied with the volume of intra-Kraft job movement. She discovered that job postings were so generic they didn't motivate

The U.N. has a charter.



Democracy has the



Constitution.

The Information Age

has IDG publications.





Words

have the power to unite, to define, to set a course. And when words appear between the covers of IDG publications, they have an even greater power: they influence the most critical economic force in the world today – the technology buyers driving the Information Age.

There are many people involved in selecting technology to drive business results. And IDG is the only publisher with the breadth of trusted resources to reach the full spectrum of IT buyers. Each IDG publication maps to a specific, influential audience responsible for driving the adoption of technology. IDG allows marketers to place their message within award-winning editorial environments where they can effectively influence all levels of the decision making process.

With IDG publications like CIO, Computerworld, InfoWorld, NetworkWorld and PC World (plus 290 others in 75 countries), you have the highly targeted, relevant editorial that buyers turn to first. And through IDG's 225 Web sites, buyers get the timely and straightforward perspective they need when deciding on new technologies. The fact is no one addresses the concerns of this extensive community like IDG. Innovation excites. Yet it can also be a barrier to those who don't completely understand it. That's why IDG is there to decipher, go below the surface and convert information into the wisdom necessary to help our readers make smart, comfortable buying decisions.

IDG also provides opinion, insight and inspiration through their leading research company (IDC), best-selling book titles and numerous worldwide industry events. All of which make IDG the most trusted source for technology information anywhere in the world.

Answers for the Information Age



IT project managers need help from 'champions' to succeed. Here's how you can keep them on your bandwagon

Cheering on the champions



By Julekha Dash

Project managers know that a project champion's help is key to their success. But a champion can get distracted and lose interest, especially as other projects and day-to-day work vie for attention.

So, how can project managers keep their "cheerleaders" motivated?

Memos and meetings are obvious ways. But Kathryn Lawton, a vice president at The Chase Manhattan Bank Corp. in New York who recently championed a smart-card project, advises that although meetings are essential, you shouldn't waste anyone's time.

"Keep [meetings] short. Cover everything [necessary] and then get on," Lawton says. "Only people who need to be there" should be invited. "People who don't need to be there tend to slow things down," she says.

Even if your project isn't going according to plan, don't keep your champions in the dark, adds Nicole Grace, a project management consultant at Seagram Co. in Montreal. They will feel betrayed if "you've kept something from them that will make them look bad."

USE THEM OR LOSE THEM

To keep champions, call on them regularly, says Jillayn R. Wolleat, who oversees about 50 projects as director of program management at Bell South Long Distance Inc. in Atlanta.

"Break down a project into chunks, and ask for advice on smaller tasks. Keep it small and do it more frequently so [the champion] gets used to helping on day-to-day issues," she suggests. For example, if you're managing software development for a

new product, get the champion's input on particular phases, not the overall project, Wolleat says.

Christopher Higgins, a senior vice president at Bank of America Corp. in San Francisco, who oversees about 100 project managers, says that as a champion, he likes to feel needed. "Let the champion know that what they're doing is really making a difference" and provide a mechanism for constructive feedback, he says.

THE 'VISION' THING

Because it's likely that your champion has seen many projects fail, prove that yours won't. That means building credibility as a leader. John Timmons, a project manager at Lockheed Martin Corp. in Bethesda, Md., suggests that project managers share their strategy for success at the outset. You have to convince the champion that he or she is the "right person to take the concept and make it go," he says.

Communicating a vision also can go a long way.

Creighton Warren, vice president at Heller Financial Inc., a Chicago commercial lender, says that while managing a technology upgrade project, he made presentations to senior management at division meetings and wrote articles on the project's progress for internal newsletters. That way, the champion "sees you as an owner of a project," Warren says.

Another way to build credibility: Remove as many obstacles at the beginning. That means getting the right resources: people, budget and facilities.

"Don't always go low-cost. Go high-quality," Warren says. "It shows that you're giving the project an

opportunity to be successful." Small details such as reserving a meeting room ahead of schedule send a clear signal that you're serious about getting things done, he adds.

END-USER SUPPORT

Gopal Kapur, president of the Center for Project Management, a consultancy in San Ramon, Calif., says project managers need to address how end users feel about the project. "If the project champion hears discouraging remarks from stakeholders, he may lose interest as well," Kapur says. He adds that management buy-in is particularly important "because many [users] take their cue from their immediate manager."

Lawton was impressed that her project managers invited end users to a meeting to demonstrate features of the automated teller machine software before the project was completed. Not only did the meeting show how the system would benefit consumers, but it also helped the busi-

ness group "appreciate the amount of work it takes to do these things."

To make your project stand out, make some noise. Many project managers suggest celebrating each milestone by taking team members to lunch, throwing a pizza party or posting banners in the hallway to highlight progress.

Timmons has a different approach. His advice: Nominate your project for an award, sponsored either by your company or an external organization. Win or lose, it's still "a great motivating technique," says Timmons, whose project, an electrical utility upgrade, won a 1998 ABT Corp. Project Leadership Award.

It's like dating, Grace adds. After a while, a person gets bored, and you need to do things to keep it exciting or the "flame will die. You need to appeal to the human side of things," she says. □

Dash is a freelance writer in Birmingham, Ala.

FIVE WAYS TO PUMP UP YOUR CHAMPION

- ▶ **Maintain open, honest dialogue.** Schedule meetings and send memos to keep your champion informed, even when things aren't going according to plan. But keep the conversations short.
- ▶ **Keep your champion engaged.** Asking for ongoing input sends a clear signal that he or she plays a crucial role. And don't be afraid to ask for help.
- ▶ **Create visibility.** Throw a party, hang banners or go after an award. Create excitement that will keep your project on the champion's radar screen.
- ▶ **Instill confidence.** Communicate your strategy for success and let your champion know as you attain each milestone.
- ▶ **Do your part to get end users' support.** Clearly define how the project will benefit them and how you and your champion can maintain or boost their support.



THE TIME FOR DISTRIBUTED COMPUTING WITH COBOL IS NOW! MICRO FOCUS CAN SHOW YOU THE WAY. * FREE SEMINAR *

LEARN TO LEVERAGE THE POWER OF COBOL FROM GARTNER GROUP, MICRO FOCUS, & COMPUTERWORLD.

Do you need Web access to mainframe or corporate server-based COBOL apps? Do you think you need to rewrite in C++ or Java to deploy on high-end, scaleable production UNIX platforms?

With millions already invested in COBOL-based applications, your business objectives have changed. You need to move your company to a client/server and Web environment.

Enter Micro Focus, the leader in COBOL technology. Beginning in early November, Micro Focus and Computerworld will sponsor a 5-city seminar that will show you

the way to migrate your mainframe or corporate server COBOL-based applications to Windows NT, UNIX and Web environments. Quickly, easily, and cost effectively.

Gartner Group V.P. Jim Sinur will lead exclusive briefings on how COBOL is being successfully leveraged into component-based, distributed computing environments.

All seminar attendees will receive a \$25 Amazon.com gift certificate, a trial version of Micro Focus Net Express™—with white paper, and a chance to win a free Palm III™—Organizer.

You may win a
**3COM Palm III™—
Organizer!**

REGISTER ONLINE TODAY
www.computerworld.com/events/microfocus
OR CALL (888) 212-8829

Seminar Locations

FRIDAY, NOV. 13TH Chicago, IL
TUESDAY, NOV. 17TH Reston, VA
WEDNESDAY, NOV. 18TH New York, NY
THURSDAY, NOV. 19TH Dallas, TX
WEDNESDAY, NOV. 25TH Toronto, Canada


MICRO FOCUS

COMPUTERWORLD
The World's Technology Newspaper

THE TIME IS NOW, THE DIRECTION IS CLEAR. MOVE YOUR COBOL APPLICATIONS TO CLIENT/SERVER AND WEB-BASED COMPUTING TODAY.

The time has come for computer risk insurance. It will be one of the most important innovations in information management, exceeding most recent technological advances.

FOR IT ASSURANCE, GET SOME INSURANCE

PAUL A. STRASSMANN



Insurance premiums may soon become a large component of every organization's information technology budget.

Insurance is critically important for our civilization to function. Without insurance, airplanes may not fly, automobiles must stay in the garage, X-ray machines may shut down, chemical factories may close and buildings may not get construction permits. Complex machinery and facilities are insured because their risk of failure is widely recognized and requires the protection insurance offers.

Insurance delivers social and economic value by asking the insured parties to weigh the costs of potentially excessive premiums against the exposure to losses. In this way, insurance puts in place a market mechanism for judging a technology's reliability. In the absence of insurance, government regulators and inspectors step in, often with solutions that are worse than the situations they try to remedy.

Insurance is already available for business interruption risks from year 2000 failures. If computers fail despite your best practices and efforts, the insurance policy would cover damages in excess of a deductible.

There's no reason similar coverage can't apply to other computing situations.

I believe business executives will be buying insurance for computer-caused interruptions not only to minimize the losses, but also for the added assurance it will give them about the trustworthiness of their IT staffs. Operators of computer networks, particularly those serving electronic commerce, will be required by customers and their legal counsel to maintain third-party liability and business interruption insurance coverage.

The simple fact is that risks from IT malfunctions now rank with earthquakes (a mere \$30 billion to \$60 billion exposure) and hurricanes (only \$5 billion to \$15 billion per incident) in potential economic losses. If you also believe the various surveys that suggest that more than 50% of all major computer projects experience material cost and schedule overruns or get canceled, that chalks up untold billions of dollars in losses suffered by organizations every year.

And if one contemplates various failure scenarios, such as a global Internet-borne software plague or deliberate acts of information terrorism, the financial

damage estimates approach those from an accident at a nuclear power plant.

THE PRINCIPLE OF FORTUITY

Those who doubt whether it's possible to insure against computer risks would be well served if they became better acquainted with the underlying theory of insurability.

All insurability is based on the principle of "fortuity," which states that a risk can't be insured when a loss is certain. Moreover, a risk can't be insured if it could have been avoided by taking generally known and easily available preventive measures. The principle of fortuity shows that computer risks are insurable — if practitioners practice their craft in a more prudent manner. How then would fortuity apply to the management of computers?

Companies pursuing over-ambitious and reckless projects, such as massive, rapid, enterprise re-engineering projects, would find that they aren't insurable. Firms that can demonstrate consistent delivery of high-quality software and secure and reliable services will enjoy lower insurance premiums — and management will get an independent confirmation that the IT staff isn't

doing something foolish.

Projects with documentation of the precautions taken to protect everyone affected by an information system would be insurable. That would encourage IT managers to get their houses in order and accumulate records of on-time, on-budget, secure and quality results.

MANAGEMENT IMPLICATIONS

The advent of computer risk insurance is likely to have an enormous effect on the IT world — both on corporate consumers and vendors of information products. Software without warranties (whether in shrink-wrapped packages or as part of a consulting product) will cease to be viable. IT executives will have to comply with public standards for systems development rather than improvise.

Information managers will have to think about the long-term impact of their systems. Otherwise, they will fall prey to the long memories of litigation lawyers who will try to do their best to demonstrate negligence — not fortuity. □

Strassmann (ceo@stacorp.com) is betting on insurance as the lever for making the value of software quality a measurable benefit.

PLAYING THE RECRUITING GAME

Recruiting IT talent is a game at Inacom Corp. Literally.

Inacom, an Omaha-based technology management services company, snares hot talent by enticing techies to play "Techno Challenge," a high-tech assessment tool disguised as a game, on its Web site (www.inacom.com). The game has three levels of difficulty; players who get to the third level are entered into a quarterly drawing for a \$1,500 gift certificate. And their names and contact information are forwarded to recruiting. "We get a list of people who get to the third level — and those are ones we want to

call right away," says Eva Fujan, vice president of technical recruiting.

More than 3,000 people have played the game since it went online in December. Of those, a couple of hundred have hit the third level, Fujan says. She doesn't know how many have been hired because of the game, but 80% to 90% of third-level players have been interviewed. The game is also used to prequalify information technology candidates who use traditional channels. "If we're interviewing for 20 systems engineers, we can say, 'Play the game first, and see how you did,'" Fujan says.

The game is part of the company's new approach to recruiting, called Inacom World Tour, designed to appeal to young techies. Inacom sets up the game at recruitment fairs, where potential candidates are urged to test their skills. The company also distributes "game tickets," which look like tickets to a rock concert, urging people to play.

World Tour is the brainchild of Fujan, who took over recruiting for Inacom two years ago after 12 years in sales and marketing. "I took a sales-and-marketing focus," she says. "I watched my son, who is 15, playing CD-ROM games, thinking, 'This is the way you should do these things. Make it fun.'"

— Kathleen Melymuka

fyi.

Get inside

DO IT NOW

and save over 80% off
the single copy price.



COMPUTERWORLD

☒ 51 issues for \$48~~X.00~~ \$39.95

First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew *U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295. Foreign orders must be prepaid in U.S. dollars. Single copy price: \$4.00/issue

Call us toll-free at: 800-552-4431 Fax your order to: (740)382-1058 E-mail: circulation@cw.com

Outside U.S.: (740) 382-3322

B4L8 P

Get inside

DO IT NOW

and save over 80% off
the single copy price.



COMPUTERWORLD

☒ 51 issues for \$48~~X.00~~ \$39.95

First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew *U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295. Foreign orders must be prepaid in U.S. dollars. Single copy price: \$4.00/issue

Call us toll-free at: 800-552-4431 Fax your order to: (740)382-1058 E-mail: circulation@cw.com

Outside U.S.: (740) 382-3322

B4L8 P

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



Review Center

Web-based training

A touch of virtual class

By Steve Alexander

Intranet-based corporate training can save you a bundle, but there still are limitations, according to users

Companies that have used intranets for training report that it's considerably less expensive than classroom training and more flexible than CD-ROM-based training. Intranet training makes it economical to train a few people at widely scattered locations and to make training available at times convenient to students. Intranet-based training also offers more interactivity than other forms of computer-based training, such as CD-ROM programs. Today, that interactivity can include a live audio connection with a classroom teacher or a shared-screen environment in which an instructor can look at the work on a student's screen and offer advice. Video isn't in widespread use yet, however, because of bandwidth limitations.

The jury remains out on the effectiveness of intranet training. Managers experienced with intranet training programs cite several drawbacks. For example, some systems don't allow students to ask questions or interact with other students, and some users find intranet training too depersonalized. Even its strongest proponents don't suggest intranet training is a replacement for the classroom version.

Though information technology courses seem well-matched to intranet instruction, it's unclear whether other disciplines — such as sales — can be taught that way. It's also unclear whether intranet training will be viewed as a burden by students if corporations push responsibility for training onto workers, forcing self-study on personal time rather than work time. For cost reasons alone, intranet training is likely to catch on in a big way. But its adoption may be limited by how much users are willing to accept it as a substitute for classroom training. In the following pages, we profile six organizations that use web-based training.

A touch of virtual class, page 78





A touch of virtual class

CONTINUED FROM PAGE 77

Clarke American Checks Inc.

San Antonio

SUMMARY: Clarke found intranet training a cost-effective way to reach a handful of employees at each of several widely scattered plants. The training's interactive qualities give it a "virtual classroom" feel and keep students excited about the learning process.

INTRANET TRAINING APPLICATION: Live training on Microsoft Corp.'s Windows NT and Lotus Development Corp.'s Notes includes audio of the teacher speaking as well as PowerPoint presentations, Excel spreadsheets and screen captures of NT functions. About 80 plant managers, accountants and office clerks will be trained at 20 locations.



Bill Magruder

STRATEGY: Training began in April as part of a SAP America Inc. R/3 implementation. When the firm goes live with R/3, students will be able to call up previous SAP sessions so the instructor can review what they did while other students watch on their screens. Intranet training also will include forums for sharing best practices and problem-resolution stories.

TECHNOLOGY: Clarke uses an application from Centra Software Inc. in Lexington, Mass., for live intranet training. The technology enables the instructor to allow one trainee at a time to control the software application on the screen, or to speak using an audio headset.

HOW IT WAS CHOSEN: "We saw Centra's software in a live demonstration at a trade show, then started to measure other companies against them. We couldn't find anybody else that just jumped out at us the way they did," says Bill Magruder, director of change management.

HOW IT COMPARES WITH OTHER TRAINING: "You configure SAP to work the way your business does, and a canned CD-ROM might not be quite the way you do it. Classroom training would be more expensive than the intranet because we have multiple locations. The intranet is a virtual classroom," Magruder says.

Adds Mary Martin, a plant accounting manager in Timonium, Md., "If you have other people involved in the training, they probably have the same questions you do. With intranet training, you can ask questions or listen while others do."

BENEFITS: "I can't fly a training team out or bring a person here for a week to do a course for one person. If I pull people into a virtual classroom, I eliminate the travel cost," Magruder says. "Besides, if we trained 80 people using an outside training firm, we would have had to pay \$129 per person. We got an immediate payback on the software purchase because we avoided paying that fee."

SHORTCOMINGS: Learning styles must be altered because the teacher can't use visual cues from students to gauge how well they understand the material. For example, each student might be asked to click on the "X" key if he or she understood what was said.

Fujitsu Business Communication Systems Inc.

Anaheim, Calif.

SUMMARY: Fujitsu has used the intranet to deliver specific sales force training it previously delivered in the classroom. While intranet training lacks the "face-to-face" quality salespeople may be accustomed to, it does have the benefit of providing trainees with a database of selling tips and experiences compiled by others who've taken the training.

APPLICATION: Since June, a half-dozen trainees have tested a marketing curriculum called "Selling to the Very Important Top Officer."

STRATEGY: The firm wants to reduce the cost of sales by cutting the length of the sales cycle. It plans to train 100 U.S. field salespeople and a few international sales representatives.

TECHNOLOGY: The application is based on technology from Pensare Inc. in Los Altos, Calif. It can be viewed in multimedia form with the voice of a real instructor accompanying an animated person on the screen, or it can be read as text-only.

"Audio and animation should only be used if they accomplish something you can't do with text and pictures. I can read faster than someone can speak or animate," says Don Shapiro, director of Web development and a former salesperson who has taken the training.

HOW IT WAS CHOSEN: The firm already liked the curriculum for classroom presentations and chose the Pensare software because it was the only intranet implementation of that course.

HOW IT COMPARES WITH OTHER TRAINING:

Intranet training is "less than half the cost of classroom training, if you include the cost of the class and travel expenses to bring people in from the field," says Judy Williams, manager of sales training.

Unlike CD-ROM training, the intranet enables the firm to build a "knowledge database" of success stories that other salespeople can use.


"When you have an instructor-led class, you wait until you have eight to 12 individuals to make it cost-effective. But one employee can go through intranet training," Williams says.

SHORTCOMINGS: People don't get to see their peers face-to-face, or to continue relationship-building after class. "Obviously, the thing you miss is the ability to ask questions, so content has to be developed very well," Shapiro says. "I'm not convinced that sales training should be done via this technology — although if any technology could do it, this is it."

ADVICE: "Have a pilot program and develop an internal group of advocates who can articulate the benefits. If you hear it from someone who isn't in the training organization, the credibility factor is increased tremendously," Williams says.



Don Shapiro



"We're fundamentally journalists here, and the pillars of journalism are fairness, accuracy and balance. And getting good stories too. I really like the idea that our readers are entertained as well as informed. I don't want my columns to be predictable or painful to wade through. I try to offer fresh anecdotes, good writing, new ways of looking at things. What do I want to send you away with? A little information, a new perspective, a smile. I don't want to be a know-it-all, because I'm not. Well maybe just enough to be dangerous."

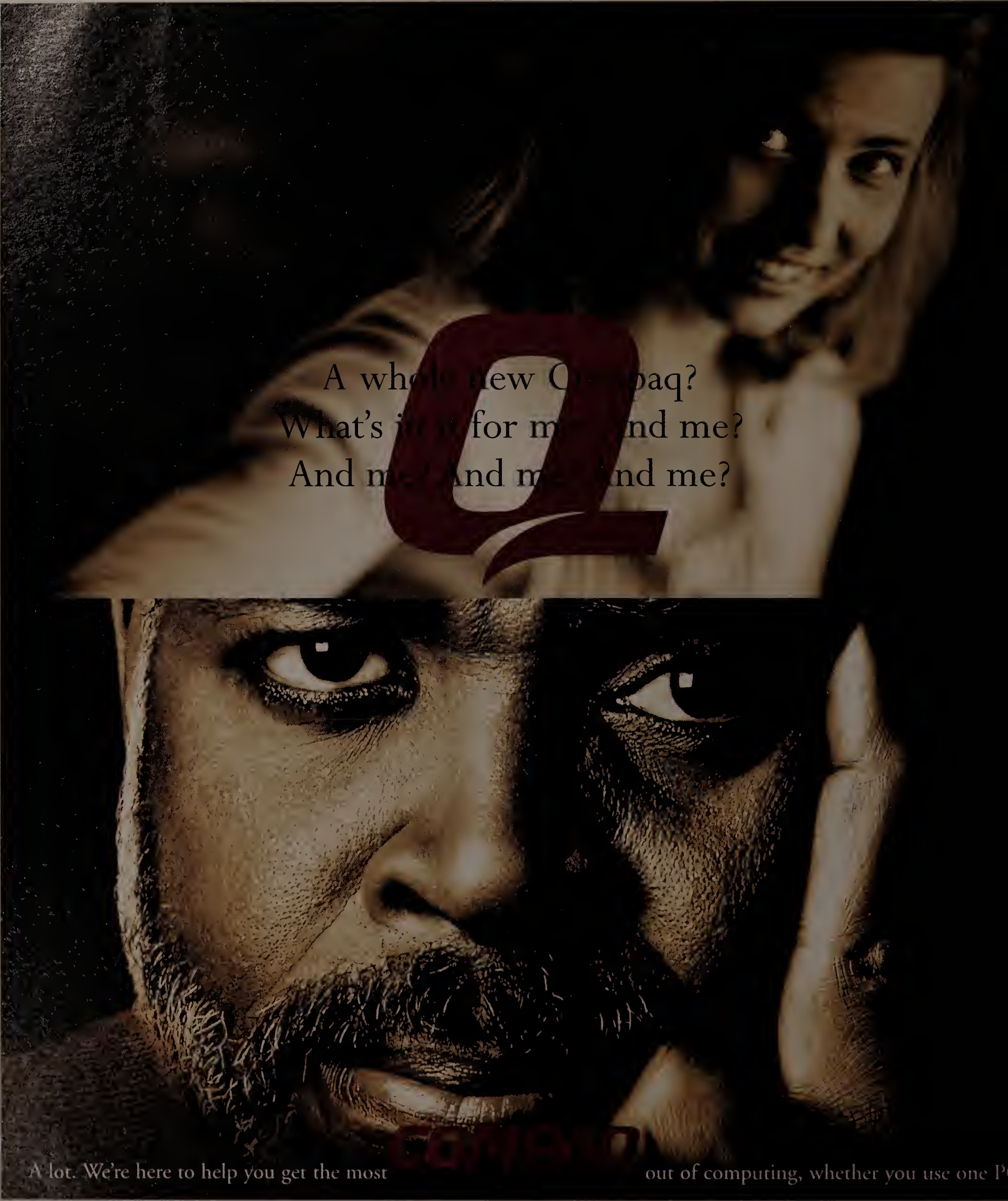
Natural Born Reporter

Maryfran Johnson, Executive Editor

COMPUTERWORLD

The World's Technology Newspaper

Read Maryfran Johnson in Computerworld. To subscribe, call us at **1-800-343-6474**, visit www.computerworld.com, or return the postage-paid subscription card bound into this issue.



A whole new Compaq?
What's in it for me and me?
And me? And me? And me?

A lot. We're here to help you get the most

out of computing, whether you use one PC

strategic partnerships. And the passion for

useful innovation that drives us to seek the be

Better answers.™



run a vast global enterprise network. How? With affordable, industry-standard products and services. The deepest
olutions to your toughest problems. For more answers, better answers, visit www.compaq.com/me or call 1-800-AT-COMPAQ.



A touch of virtual class

CONTINUED FROM PAGE 78

Merrill Lynch & Co.

New York

SUMMARY: Merrill Lynch is training its own Web designers using outsourced intranet training. In the long run, the firm may bring the training in-house.

APPLICATION: The courses taught include HTML, the Web programming language; Active X; and JavaScript. So far, the project has been piloted with about a dozen people.



James Lawler

STRATEGY: If the pilot project running through the end of this year is successful, training will be rolled out to several dozen other Web information technology professionals in the firm's Sales Training Technologies Group. "This is for people who do not have time to take classes because they are busy," says James Lawler, vice president of interactive training technologies.

"They can take the training at their desktop PCs before 9 a.m. or after 5 p.m., at lunch or at home," Lawler says.

TECHNOLOGY: DigitalThink in San Francisco acts as an outsourcer for the service. The server that provides the training resides at DigitalThink, and training is provided over the Internet. If the training is deemed acceptable, Merrill Lynch may provide a link from its intranet web page to the DigitalThink server or put the courses on a Merrill Lynch intranet server to improve response time.

HOW IT COMPARES WITH OTHER TRAINING: It's quicker and cheaper than classroom training, either inside the company or out of it. But in a company accustomed to classroom training, the trainers will have to get used to it.

"This empowers employees to train themselves and not to rely totally on the firm to train them. It complements stand-up training but is not a replacement for it," Lawler says.

BENEFITS: "One of the big advantages is, DigitalThink does exclusively Web topics. So its expertise is applied only to that and not diluted with other things," Lawler says. "Also, if you have a tight training budget, here is another vehicle by which you can train at less cost. You put the burden on employees to do some of their own training."

SHORTCOMINGS: Employees may want to do this during business hours to the detriment of their work, which has to be managed, Lawler says.

Cypress Semiconductor Corp.

San Jose, Calif.

SUMMARY: Earlier this year, the programmable logic division of Cypress held an online seminar for potential customers about a very high-speed integrated circuit hardware description language. About 300 engineers in 21 countries participated in the one-hour introductory class, which was offered over the Internet through an outsourcing arrangement.

STRATEGY: The company is considering using the software as an intranet application for updating field sales offices on product status and sales techniques for specific markets. In the meantime, it's one way to reach out to new customers via the Internet.

TECHNOLOGY: The Education News & Entertainment Network (ENEN) in San Diego provided Internet broadcasting facilities to deliver the training seminar. While in chat mode, participants could type in questions that were answered by audio over the Internet. Questions and answers also were available in real-time text on the screen.

HOW IT WAS CHOSEN: "We didn't do a competitive analysis. We looked at what ENEN had done with other competitors in our field who used their technology and felt comfortable giving it a try," says Linda Stone, software marketing manager of the programmable logic division.

HOW IT COMPARES WITH OTHER TRAINING: "This was something that could be taught online. But as far as somebody really utilizing the information and using it to do exercises, it's more convenient if somebody is colocated with the teacher to ask questions. Our goal was to offer the one-hour basic class online, then invite the participants to a demo at a customer site or other location," Stone says.

"It's difficult to get out of the office to go to a vendor presentation that's not near me. But I can close my door to do this without too much trouble," says George Dotts, manager of software engineering at Hillside, Ill.-based L & J Engineering, a manufacturer of industrial controls for the petrochemical industry.



Linda Stone

SHORTCOMINGS: "I'd like to see the technology improved. Some of the participants lost their connections with the ENEN server," Stone says.

ADVICE: "Evaluate the technology by getting advice from those who already have used it. But the cost is low enough to experiment with it," Stone says.

Crestar Financial Corp.

Richmond, Va.

INTRANET TRAINING APPLICATION: The bank, which has nearly 500 branches in Virginia, Maryland and the District of Columbia, is migrating mainframe-based employee training to an intranet. Initial training is about to begin and will involve 9,300 people, who will be trained on bank-specific applications.



Mary Ellen Winks

STRATEGY: Intranet training, based on technology from Pathlore Software Corp., will help teach employees newer, Windows-based bank applications. That training couldn't be done on the mainframe, as had been done in the past, because it couldn't simulate Windows' buttons and drop-down menus.

HOW IT WAS CHOSEN: "We looked at three training packages with similar education features. But we chose Pathlore because of its full range of administrative features, such as student registration, tracking and reporting," says Mary Ellen

Winks, senior vice president of the corporate training department.

HOW IT COMPARES WITH OTHER TRAINING: "If you need to share ideas or bounce ideas off others, it's better to have people in a group environment. But if you are learning bank processes or policies or some specifics about a product, intranet self-study works fine," Winks says. "In addition, the pages are more interesting looking than mainframe self-paced training, which was text-only and had gotten pretty boring."

Self-directed intranet training provides the ability to jump around in a course or jump to a different teaching unit. Compared with mainframe, CD-ROM and disk-based training, the intranet method simplifies tracking who took courses and what level of mastery was achieved.

SHORTCOMINGS: The mainframe computer-based training experience may not help much when it comes to intranet training. "When you buy a package like this, you need to have the right team to design the courses — meaning the right kind of technical ability plus the instructional design knowledge," Winks says.

She says the technical learning curve for mainframe-oriented training experts is huge when they move to an intranet-based environment.

ADVICE: "If you are a typical training department, don't jump into this and try to do computer-based training over the web. The training department has to get together with IS to make this work," Winks says.

University of California at Davis

SUMMARY: Intranet training is one way to reach a huge audience of IT professionals, staff and students while avoiding the need to use more of the university's scarce classroom space. Part of intranet training's effectiveness is its ability to offer a choice of a large number of courses — something that CD-ROM training doesn't provide, according to university officials.

APPLICATION: The university offers 300 IT courses — aimed at IT staff, university staff and students — that include desktop applications, Java programming, Oracle administration and Unix systems administration. The training was introduced in May; about 500 people had taken courses by September. Although that's relatively few people in relation to the total number of courses, officials say it's because the university has a small population during the summer months.

TECHNOLOGY: Courses from CBT Systems Inc. in Menlo Park, Calif., can be accessed through about 14,000 shared PCs and additional personal machines.

HOW IT COMPARES WITH OTHER TRAINING: "It's costing us in the neighborhood of \$50,000, which is less than the cost of one instructor and one-tenth what would be charged to commercial customers. That's because we're getting it on a volume and educational discount," says Pat Kava, manager of IT client services. A course can be taken when and where it's convenient for the trainee. Unlike CD-ROM-based instruction, the intranet makes all 300 courses available at any time.

BENEFITS: Intranet education is expected to help retain technology staff because it includes free courses needed for Microsoft and Novell certifications. "Any campus person can use it, so we can train 40,000 people with one purchase," says Ann Mansker, who provides desktop technical support at the university. "If I had to pay for it, getting the equivalent classroom training on the 300 intranet course titles would cost me more than the software license cost the university."

SHORTCOMINGS: "For me, live classes are more stimulating," Mansker says. "The computer-based stuff is harder to sit around and do because it's hard to focus on for more than half an hour at a time."

ADVICE: "Different schools of thought about how people learn are embodied in different software packages, so pick the one that fits your model of how people learn," Kava says. □

Alexander is a freelance writer based in Edina, Minn. His Internet address is s.j_alexander@rocketmail.com.

Recent announcements in the intranet- and computer-based training market

► Asymetrix Learning Systems Inc. has announced the availability of Ingenium 4.0, a skills-based training management system intended to automate instructor-led training, logistics and tracking of individual and group competencies.

The redesigned product allows for enterprise-class scalability and features a new client/server design and a new user interface that uses standard Microsoft Corp. Office 97 features, according to Bellevue, Wash.-based Asymetrix (www.asymetrix.com).

► CBT Systems has extended its interactive, computer-

based training programs for SAP America Inc.'s R/3. The 10 new courses are a series of Business Process Introduction programs developed in conjunction with SAP and announced in September at Sapphire '98, the annual SAP North America user conference.

The new courses are intended to complement CBT's 20 existing SAP programs. CBT Systems (www.cbtsys.com) is based in Menlo Park, Calif.

► DigitalThink Inc. recently announced an agreement with Cambridge Technology Partners Inc. (CTP) to offer custom Internet-based training to corporate customers.

The training will use DigitalThink's Web-based training delivery system and will draw on CTP's Educational Training Services practice. DigitalThink (www.digitalthink.com) is based in San Francisco.

► One Touch Systems Inc. in San Jose, Calif., (www.onetouch.com) has announced it has started shipping its new Network Management System (NMS) software.

NMS adds centralized command-and-control capabilities to installed One Touch interactive broadcasting and distance-learning networks.

In Depth

Inside information

We talk to the authors of a browser-wars book for their take on the Microsoft antitrust case

When the U.S. Department of Justice filed an antitrust suit against Microsoft Corp., husband-and-wife technology columnists Michelle Slatalla and Joshua Quittner found themselves at the center of the industry's hottest story.

"Microsoft is attempting to cast its actions in a new light that would be favorable in court."

— Michelle Slatalla

Slatalla, 37, who writes for *The New York Times*, and Quittner, 41, who is a member of *Time* magazine's staff, spent 18 months reporting on Netscape Communications Corp.'s Internet challenge and Microsoft's response. Their

Husband-and-wife technology columnists Michelle Slatalla and Joshua Quittner



book, *Speeding the Net: The Inside Story of Netscape and How It Challenged Microsoft*, came out in March.

Though the couple kept their reporting neutral in the book, they formed some strong opinions about the browser battle. Shortly after the Justice Department and Microsoft submitted their witness lists, Slatalla and Quittner spoke with Leslie Goff about their unique take on the case.

"The case turns on who knew what when."

— Joshua Quittner

CW: A lot has happened since your book came out. What do you make of all the allegations and counter-allegations?

QUITTNER: I think Microsoft is obviously a brilliant company, but I really believe they overstepped here. Microsoft should have let [Netscape] develop but clearly was threatened by what was going on.

Microsoft was able to leverage its business to basically obliterate this company, and that's not fair. Also, I believe that being able to control the operating system gives them an unfair advantage in the software business and that it's unfair not to separate one from the other.

SLATALLA: As this case drags on, Microsoft is attempting, very overtly, to cast its actions in a new light that would be favorable to [it] in court. It has [recently] released a lot of information indicating that firm plans were under way to develop a browser before Netscape was even incorporated in 1994. But they're talking about the same discussions, retreats and meetings that everyone has known about since 1996. Only now, they've given it a new spin to show a pattern of browser development that predates Netscape's incorporation.

The facts remain the same: Since 1993, a few people at Microsoft saw the Net as an enormous market opportunity. They were casting about for ways to link the business to the emerging Internet market, and over time they managed to achieve that goal. To what extent that process was led by Microsoft studying Netscape remains to be determined in court.

CW: Can you cite an example?

SLATALLA: As the case unfolded this summer, Microsoft talked of an executive retreat in 1994 as an indication that Microsoft executives had been very clearly intent on building a browser before Netscape incorporated. Well, as early as '96, Microsoft's [public comments] about the evolution of its Internet strategy [dealt with] that retreat very differently — they said some memos were distributed and there was a general discussion of how the Net was an area to focus on. That retreat was widely reported on before, and suddenly it starts being written about in 1998 as some new revelation of some Microsoft strategy that predated Netscape.

CW: What did you think of Netscape's recent allegation that Mi-

crosoft approached the company about divvying up the browser market in a Mob-style fashion? That wasn't in your book.

QUITTNER: That was something in the court papers, but the people at Netscape never told us. I thought it was interesting that it came out after the fact, but in talking to Marc [Andreessen] and others at Netscape, no one ever mentioned that Microsoft was so crass as to divide up the market Mob-style. I went back to the company and said, "Why didn't you bring this up?" And they said, elliptically, that a lot had happened that they didn't want to discuss until they filed court papers. That struck me as odd, and I don't know what to think of it.

CW: How surprised were you that neither side plans to call Microsoft's Steve Ballmer or Bill Gates?

QUITTNER: I think this case will be made or lost at the lower reaches of Microsoft. Obviously, Ballmer and Gates had a huge amount to do with the strategy, but the case turns on who knew what when, and there were some dramatic moves at the lower reaches of the company that will determine the outcome.

For example, in the book we wrote about a slideshow for Microsoft managers, and the whole tone of that meeting was, "We are going to crush this company." In a normal business, when competitors are the same size and strength, that's fine. But when you say, "We will take our operating system that is on 90% of personal computers and use it to force people to take our product," that's not fair. And if Netscape can prove that such a thing happened, that will be highly unpleasant for Microsoft.

CW: The people who side with Microsoft essentially are saying, "Let the market decide," and implying that Netscape is a crybaby. What's your take on that argument?

SLATALLA: Clearly, the whole reason for the Sherman [Antitrust] Act was because it was the strong opinion in government that, for whatever reason, the market wasn't capable of sorting out antitrust issues. And the law remains robust today because there is a deep and abiding distrust of

monopolies and of whether, left to its own devices, the market could resolve what is perceived as a monopolistic situation.

Certainly, another argument is that as we try to understand products and technologies and markets that are totally new to business and how we live our lives, maybe the old laws aren't a sufficient set of checks and balances. But I personally haven't seen any evidence of that.

CW: What will be the outcome of the suit?

QUITTNER: I think this is a case that will ultimately make antitrust law for the 21st century, and I wouldn't be surprised if any number of issues will go to the Supreme Court. Then Microsoft will be in worse shape than it is now. Some of the issues Microsoft has won at the appellate level will be overturned.

I think it's clear when you look at the nitty-gritty that Microsoft used its position to create an anticompetitive climate and that, left unchallenged, it would severely stifle the software business. You can't play Bop-a-Mole with a new company.

Microsoft has said all along that it was given, in the 1995 consent decree, the ability to integrate as long as it innovated. And I think Microsoft's idea of that [innovation] will be Sun [Microsystems Inc.]'s and Netscape's and other companies' ideas of anticompetitive practices. And the Supreme Court will have to decide.

I believe Microsoft will end up with a monopoly on the operating system but will have to unbundle the [applications] software.

CW: What do you think all this will mean for the business user?

SLATALLA: It will determine the direction that companies will go in, to what extent consumers need to be protected and given choice, and

to what extent the market is going to be left alone to make these kinds of decisions.

QUITTNER: The laws are generally broadly written. I don't think there's anything hugely mysterious about this. The market has already chosen the Windows operating system and Microsoft as the provider of that. But I don't believe that they can be overthrown overnight. Even if they were, I would argue that people would continue to use Windows products for the next decade or two.

People get all riled up and say this is a matter best left to the market to decide. If you look at how the [software] market is set up right now, that's probably right.

But the real harm is that five years from now, Microsoft, left unchecked, will squash the market and in the process its stock will go up and innovation will go down. Or if Microsoft wises up and restructures, then you could have an outcome like [the] AT&T [divestiture], which was good. Because of that, we have more innovation than you can shake a computer mouse at.

The software industry is something this country has created and excelled at, and [if Microsoft is restructured] the industry will just explode into a billion pieces, and other markets and the economy will be served — new jobs and new services and power distributed to the many instead of the few.

CW: Will we ever know the truth about what Microsoft did in the browser wars?

SLATALLA: A lot depends on whether the case goes to trial or whether it's settled.

QUITTNER: I think [Netscape's allegations] are definitely true, or enough are true. If you were in Microsoft's shoes, you'd do just what they did. That doesn't make it right. □

Goff is a freelance writer in New York.

Speeding the Net: The Inside Story of Netscape and How It Challenged Microsoft, by Joshua Quittner and Michelle Slatalla (1998, Atlantic Monthly Press, New York; hardcover, 320 pages; \$25)

SPEEDING THE NET

JOSUA QUITTNER
MICHELLE SLATALLA

IT Careers

F A C I N G W I N D O W S O F

Blind programmers

By Steve Alexander

could compete quite nicely in the IT workplace when the mainframe was king.

But today, as graphically oriented Windows tool kits displace the text-based mainframe development, blind programmers are facing an uncertain future.

Nonstandard graphical components in many new tool kits can't be read by the blind. That's true despite the help of screen translating devices that traditionally have enabled them to work alongside their sighted information technology co-workers. To a large extent, this is shutting blind programmers out of new client/server development projects. And it's hampering their careers more than co-worker attitudes about blindness ever did.

"Most of the new applications right now are coming from tool kits that blind people can't use," says Janina Sajka, director of information systems at the American Foundation for the Blind in New York. "While there is some hope on the horizon that we can get tool kit companies to be more responsive to serving all people... the prospects today are fairly bleak."

It isn't that people don't care, says Gary Wunder, a senior computer programmer/analyst for mainframes at the University of Missouri in Columbia, who is blind. "But everything these days has to be justified with a business case. If there aren't enough programmers who are blind who want to do something, why do it?"

At the same time, blind programmers must face stereotypical ideas



Janina Sajka of the American Foundation for the Blind says most new applications "are coming from tool kits that blind people can't use"

about the limitations of blind people, says Curtis Chong, president of the National Federation of the Blind in Computer Science. Chong, who is blind, is director of technology at the organization in Baltimore.

"IT workers at some companies have learned that blind people can compete. But lots of others have never worked with a blind person before, and attitude-related barriers apply," Chong says.

THE FRIENDLY MAINFRAME

Chong says blind programmers have long been able to do their jobs in the mainframe world. After all, mainframe languages such as Fortran, Cobol and assembler are text-based. Using screen readers — software that converts text on the screen to speech — blind programmers were able to read what was on the screen and do the same development work as sighted colleagues.

When PCs arrived in the 1980s, blind programmers could still do their work because the DOS operating system was text-based. The text could

be read with screen-reader software, Chong says.

But with the arrival of the Windows graphical user interfaces, which couldn't be converted to text, blind programmers were initially locked out of the newer PC and client/server worlds, Chong says.

That door was partially reopened for blind programmers when screen-reader software was adapted to convert some, but not all, Windows graphical interfaces into screen-readable text.

But there was a catch. Screen readers could convert graphical interfaces to text only if certain programming conventions were followed. And as Windows interface technology raced ahead, software companies increasingly took nonstandard programming shortcuts in their software developer tool kits — shortcuts that rendered some items on the screen invisible to screen-reader software.

BARRING THE WINDOWS

That has left blind programmers at a severe disadvantage because they are in effect barred from developing in

LOST OPPORTUNITY

some new Windows environments, Chong says.

"I know blind programmers who work in C and Visual Basic in addition to mainframe languages, because as long as they can get at a text file, they can do programming. But if the graphical tool kit you are using requires you to drag and drop items on the screen, you can't do it," Chong says.

Crista Earl, a technology resource specialist at the American Foundation for the Blind, agrees.

"There sure haven't been very many blind programmers who have broken into the Windows world. In our database of 130 blind programmers, maybe a dozen have gone into Windows development. The majority are working on mainframes," Earl says.

PROGRESS OR A PROBLEM?

The problem faced by blind programmers boils down to technological progress in Windows, says Michael Freeman, a computer systems programmer in Vancouver, Wash., who is blind. Freeman works at the Bonneville Power Administration, a government agency that manages electric power generated by federal dams in the Western U.S.

"You can't stop people from innovating, and I don't see that our screen readers will be able to keep up with that," Freeman says. He programs Digital Equipment Corp. mini-computers because they use a text-based operating system. "I still think it's worthwhile for a blind person to try a career as a programmer, but I do fear how well that person will do in the long term."

Although none of the blind programmers interviewed said he believes he is in immediate danger of losing a job, there is concern about whether they will be needed in the future.

Freeman, who is 50, says he hopes there will be enough text-based work for blind programmers to last until he retires. "Up to now, I've been able to avoid Windows NT because the computers that control the power system

are for the most part VAXes. But as more things we use, such as time sheets and discrepancy reports, migrate to the NT network, I'll need to do NT. I don't know what will happen; all I can do is try."

Wunder also is concerned about whether he can adapt to Windows in the future. "With Windows, it's not only how do you write a program, but, once you do, how do you make sure that the buttons line up on the screen? How do you make it visually attractive? I don't know the answer to that yet. . . . I'll either be able to do my job here or I won't. And I think the jury is still out. That's not very comforting because my daughter is still going to need food."

Brian Buhrow, a senior systems engineer at the University of California at Santa Cruz, who is a blind Unix programmer, says he is comforted that Unix is much in demand these days. "And there also are opportunities for doing things outside the mainstream of end-user programming, such as doing networking stuff that's not inherently visually oriented," Cruz says. "These opportunities may diminish, but they'll be there for a while."

Perhaps the most ominous aspect of the Windows problem for blind programmers is that they are being barred from truly mainstream development, Sajka says.

SEEING-EYE PROGRAMMERS

Some blind programmers have dealt with the tool kit situation by trying to shift the Windows development projects they couldn't handle to others, Chong says.

"If you were lucky, you could delegate that kind of work away. But if not, and you couldn't get at the underlying text of what you wanted to do, you were out of luck. And that was the frustration many blind people ran into," Chong says. "Then the only way a blind person could do the work was to hire a sighted person as a reader to help run the machine."

That represented big change for

blind programmers, who had long used special devices to make themselves competitive with sighted people. Chong says the principal devices are screen-reading software; a braille embosser, which accepts text from a computer and prints it out in braille; refreshable braille displays, which are tactile devices that convert a single line of screen text into braille in real time; and special speech synthesizers that convert text to speech and stop and start very quickly.

Another challenge for blind programmers: "Who will pay for all this expensive adaptive technology, given the fact that when the employee leaves, someone else may not find it useful?" Sajka asks. Cost may not be an issue for the employer when it comes to screen-reader software, which costs as little as \$500. But that could change when it comes to the purchase of a braille display for \$3,000 to \$14,000.

There are other technical obstacles for blind programmers in their everyday work. Something as routine as the project management software used in some IT shops can pose a problem. Many assign priorities to IT projects with a color-coding scheme.

"A sighted person instantly sees the priority of critical to not-so-critical projects," Wunder says. "But how do I get that same information? Sure, somewhere in the program is a number that represents what the color scheme ought to be, but my screen reader can't read that. So I still write down my IT projects on three-by-five cards and work with my boss on priority."

ATTITUDE ADJUSTMENTS

And there are nontechnical challenges for blind programmers as well.

"The problem is one of attitude," Chong says. "What is it that an IT professional expects from somebody who

Debunking myths and stereotypes

Blind programmers still often face a variety of stereotypes. According to Curtis Chong, president of the National Federation of the Blind in Computer Science, the challenges that blind programmers face include beliefs that:

- Blind people aren't mobile and sit in a chair all day. "It's not uncommon for me to be asked to go to class for a week in a different town, plus check into the office every night and get E-mail," Chong says. "And when we did disaster recovery exercises, I was expected to go along."
- Blind people can't handle printed information. "I hire a human reader for 20 hours a week or use optical character recognition technology to convert text to speech or to braille."
- Blind people who can do programming work must be incredibly smart. "If the basic techniques are in place to deal with blindness, it shouldn't require any more genius for a blind person to do programming than it does a sighted person."

is blind — do they think that a person will be able to do work, function as a normal human being, socialize and get along with people in the workplace? Or do they think a blind person is weird and can only pick up a phone? IT professionals should examine their thinking about blindness and root out the typical stereotypes."

Do attitudes about blind programmers restrict their opportunities to be promoted? There's no easy answer, Chong says. It depends on whether management "has a positive acceptance of a person who is blind," plus whether the blind person can overcome society's tendency to undervalue the blind and push hard to be promoted based on merit, he says.

Buhrow says administrative jobs represent an opportunity for blind programmers.

"Blind programmers could do product management that involves making decisions about people and products rather than about where to put code statements. I am a programmer. But I'm also a systems administrator, so I do a lot of things that are not programming but rather hardware installations and configurations." □

Alexander is a freelance writer in Edina, Minn.

Michael Freeman says he has fears about how well blind programmers like himself will fare in the long term.

IT CAREERS

Join QIS & Make "IT" Happen

If you are an experienced IT professional. You have to be with a fast track company that offers you diverse growth opportunities while keeping you geared up with cutting edge technologies. If you are looking for a challenging opportunity supporting some of the World's largest Organizations, we have a World of Opportunities waiting for you.



World of Opportunities

- SAP R/3, ABAP/4, BASIS, ASAP methodology
- PEOPLESOFT HRMS/FINANCIALS
- SOL*SERVER DBA, WINDOWS NT
- CICS, COBOL, DB2, MVS, JCL, Year 2000
- J.D Edwards/BAAN
- ORACLE FINANCIALS /MANUFACTURING
- ORACLE CASE/DESIGNER, PROJECT LEADER
- UNIX SYSTEM ADMINISTRATOR

- ORACLE/SYBASE/INFORMIX DBA
- E-COMMERCE/Web Specialists
- LOTUS NOTES/DOMINO
- C++/VISUAL C++, JAVA, MOTIF
- VISUAL BASIC, SOL*SERVER, ASP
- IMS or DB2 DBA
- POWERBUILDER CPD
- PROJECT MANAGERS

POSITIONS ALWAYS AVAILABLE

Computer Programmer	Programmer-Analyst
Database Administrator	Database/ERP Analyst
Software Engineer	Computer Consultant
Systems Analyst	Network Administrator



QIS is one of the fastest growing IT companies in the U.S. You will be provided with excellent compensation; benefits, employee stock options, training in Advanced Technologies, and More. Please forward your resume today to:

Quality Information Systems
Attn: National Recruiting
25300 Telegraph Road, Suite 590
Southfield, MI 48034 or fax to 800-785-5827
Phone: 800-785-2538
Email: recruiting@qis.com
Equal Opportunity Employer



Director of Communication and Information Services

Bachelors degree or equivalent in Data Processing, Computer Science, Public/Business Administration or a related field and eight (8) years experience in information systems or data processing, including four (4) years at a management level. Must have thorough knowledge in systems/network planning and acquisition, telecommunications hardware and systems, budget development/administration, and policy development/implementation.

Responsible for planning and directing data processing encompassing technical computer system design, systems analysis, applications programming, the centralized computer facility operation for all major citywide systems, and all data communications including in-house and inter-building fiber optic networks to ensure effective operation. Also responsible for the citywide telephone system (7000+ lines); all citywide radio communication systems; the installation, maintenance, and continuous operation of the 911 emergency system/police/fire emergency dispatch systems.

Salary DOQ + benefits.

Interested individuals must submit an application, salary history, and the names and addresses of three (3) professional references by Friday, December 11, 1998.

City of Dallas
Department of Human Resources
1500 Marilla, Suite 6AN
Dallas, TX 75201
(fax) 214-670-3764
EOE/MFD

Programmer/Analyst sought to work on the analysis, design, development, testing, implementation and revisions of management information system applications in a client server (object oriented) environment using C/C++. Responsible to modify and migrate applications from platform to platform and to provide technical support to end users. MS Degree CS/CE/EE/Industrial and Management System Engineering or related. Education or experience must include a relational database such as ORACLE or SYBASE and a GUI development tool such as Visual Basic or PowerBuilder. Hours: M-F, 8-5; 40 hrs/wk. Salary \$51,500/yr. Send 2 resumes to: Case # 80111 PO Box #8968, Boston, MA 02114.

Software Engineer. Design, implement, debug and maintain real-time software for a microprocessor-based product with a multi-tasking operating system using low and high level programming languages. Tools: Assembly; C; Z80 microprocessor. B.S. in Computer Science, Math, Elec. Eng'g or Physics + 1 yr exp in job offered or as Programmer Analyst required. Previous exp. must include: Assembly; C; Z80 microprocessor. 40 hrs/wk. 9am-5pm. \$41,870/yr. Must have proof of legal authority to work permanently in the U.S. Send two copies of both resume and cover letter to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 7 North, Chicago, IL 60605, Attention: Sheila Lindsey, Reference # V-IL 19500-L. NO CALLS. An Employer Paid Ad.

Systems Analyst/Programmer. 2 positions available. 40 hours per week. 8am to 5pm. \$80,000 per year. Utilize PowerBuilder 5.02 & Sybase System 11 to develop, design, & implement programs/systems. Maintain advanced capacity engineering systems. Gather business requirements to additional system enhancements for engineering system. Utilize SQL/stored procedures for adhoc queries & reporting. Work rendered on UNIX platform. Min. reqs.: Masters in Business Admin., Engineering, or Information Systems and 3 years in carrying those duties set forth in the job offered or 3 years in design & development in PowerBuilder, in Sybase database in UNIX, & in SQL stored procedures. [Note: a BS or BBA in Business Admin., Engineering, or Information Systems accepted in lieu of Masters if 5 years in carrying out those duties in the job offered or 5 years in design & development in PowerBuilder, in Sybase database in UNIX, & in SQL stored procedures]. Apply at the Texas Workforce Commission, Dallas, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, J.O.# TX0480763. Ad Paid by An Equal Opportunity Employer.

COMPUTER SYSTEMS ANALYST to identify clients' problems and specific issues in assigned project with a focus on developing switch software for phone card applications. Duties include: making necessary changes to ORACLE 7.x RDBMS, back up and recovery, installation of ORACLE, clients servers applications and application tuning (including ORACLE); developing programs and supporting scripts. Working environment consists of the following operating systems, computer languages, Graphical User Interface Tools (GUI) & databases: MS-DOS, WINDOWS 3.11 for WorkGroup and Windows 95, OS/2 WARP, NOVELL NETWORK 4.12; "C", SOL: PL/SOL, Pro*C, Power Script, PowerBuilder Ver. 3.0/4.0 & Windows SDK; ORACLE 7.x RDBMS. Requires B.S. in computer engineering or computer science (if foreign degree must have U.S. equivalent). Requires 1 yr. 6 months direct experience. Salary \$60,000/yr., 40 hrs/wk. 9 a.m. - 5 p.m. O.T. n/a. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of both letter and resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State St. 7 North, Chicago, IL 60605, Attention: Joan Sykustus, Reference # V-IL 19363-S. AN EMPLOYER PAID AD. NO CALLS.

Programmer Analyst - PC Networking/Sys. Admin. & Appl. Integration: utilizing knowl. of networking topologies, networking technologies & PC architecture install, configure manage physically distributed computer networks & network operating systems. Provide user support, network troubleshooting, network expansion, printer services & back-up mgmt. Coordinate local & remote hardware & software configuration; implement & execute operations procedures & monitor system resource utilization; perform capacity planning. Interface main application environ. w/underlying networking software. Carry out performance tuning of network for user applications. Req: B.S. in comp. sci. - math/engr'g/sci./business-commerce or equiv. 1 yr exp in job offered or as programmer analyst/systems analyst. Must have appropriate combination of skills as follows: 2 of A & 2 of B & 1 of D; or 2 of A & 2 of B & 1 of C & 1 of D. A includes Operating Systems: Novell NetWare, Windows NT, OS/2, Windows 95, LAN Server, Banyan Vines, LANmanager, LANtastic.; B includes networking: IPX/SPX, TCP/IP, FTP, Windows for Workgroups, NetBIOS, X.25; C includes network mgmt: SNMP, LANalyzer, NetView, NetManager; D includes LAN technologies: Ethernet, Token Ring, FDDI. High mobility preferred. (Multiple positions) 40 hrs/wk; \$55,300 - \$65,000/yr. Report/submit resume to Local Office Mgr., Mon Valley Job Ctr, 345 Fifth Ave., McKeesport, PA 15132. #8042895.

Programmer Analyst (IBM Mainframe): Structured systems analysis, design, development, testing, quality assurance, implementation, integration, maintenance, support & conversion of large volume online transaction processing & batch application systems in a multi-h'dware/multi-s'ware environ. over centralized database systems using relational/hierarchical/network database mgmt systems, Third Generation Languages (3GLs), Fourth Generation Languages (4GLs), CASE tools & Transaction Processing Software. Reqs: B.S. in Comp. Sci., Math. Eng'g or Sci., business-commerce (or equiv.) & 1 yr exp in job offered or as Software Engineer/Systems Analyst. Must have appropriate combination of skills as follows: 1 of A & 1 of B & 1 of C; or 1 of A & 2 of B; or 1 of A & 2 of C. A includes DBMS: DB2, IMS DB, IDMS DB; B includes Tools: CICS, IMS DC, IDMS DC, ADS/O, QMF, VSAM, MF-Workbench; C includes Languages/CASE tools: TELON, IEF, ADW, CSP, APS. High mobility preferred. (Multiple positions) 40 hrs/wk; \$55,300 - \$65,000/yr. Report/submit resume to Greg Schwing, Mgr. Pittsburgh South Job Ctr., 2100 Wharton St., Pittsburgh, PA 15203. JO #9089003.

Senior Project Manager/Executive Producer for a Software development and support company. Duties include: involvement in initial product design of interactive computer games production, client negotiations, and client liaison for marketing. Responsible for obtaining final contract compliance and sign off by client. Includes preparation of project budgets and schedules, reviewing project costs and project tracking. Also includes development of tools and components for games and internal products at staff or senior levels. Utilization of C++, Direct 3D, data structure, and Windows. Position requires a Juris Doctorate and two years experience in the job offered or two years experience in Computer Game Design. In lieu of Juris Doctorate, employer will accept Master's degree in Computer Science or Computer Engineering. Salary is \$78,000.00 per year. Hours are 8:00 a.m. to 5:00 p.m., 40 hours per week. Must have proof of legal authority to work in the United States. Send Resume to Iowa Workforce Center, 122 Kellogg Ave., Ames, Iowa 50010-0410. Please refer to Job Order # 1100782. Employer paid advertisement.

DATABASE ADMINISTRATOR Database Administrator to do logical and physical design of Oracle database; Code test and implement Oracle scripts applying knowledge of Database Management Systems; Calculate optimum values for Oracle database parameters; performance tune Oracle databases; Model Oracle database security; manage backup and recovery of Oracle databases; make changes to Oracle database applications using expertise in Oracle database administration which includes logical design, physical design, performance tuning, backup and recovery, coding of scripts, knowledge of Oracle 7.3, SOL*DBA, Pro*C (tools) and PL/SOL (Language). Requirements: Bachelor's Degree in Computer Science or related field and one year experience as a database administrator, expertise in Oracle database administration which includes logical design, physical design, performance tuning, backup and recovery, coding of scripts, knowledge of Oracle 7.3, SOL*DBA, Pro*C (tools) and PL/SOL (Language). Salary: \$57,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and relocation. Apply: Mr. James Clark, Uniontown Job Center, 32 Iowa Street, Uniontown, PA 15401, Job No. 5021463.

Programmer Analyst - BAAN Appln. Consultant: Implementation of the BAAN Enterprise Resource Planning (ERP) package using the structured BAAN implementation methodology invol'g Software Selection, Realization (structured systems & business analysis, prototyping, design, knowledge transfer, business function & business process modification) & optimization in a complex, Enterprise wide production, fincl & logistic environ., on multi-hardware Unix & Windows NT based systems using Oracle, Informix, SQL Server & BAAN's proprietary database, tbase. Req: bachelors degree in comp. sci. - math/engr'g/sci./business-commerce or equiv. 1 yr exp in job or 1 yr as software engr/systems analyst. Must have appropriate combination of skills as follows: 2 of A or 2 of B as follows: A) Software: BAAN IV Manufacturing, Distribution, Dynamic Enterprise Modeler, Service, Finance; B) Tools: BAAN IV tools, Safari Report Writer, Windows NT, Unix & Unix Networking tools - TCP/IP, X.25, ISDN; high mobility preferred (multiple positions). 40 hrs/wk; \$55,300-\$65,000/yr. Reply to: Ms. Joan Lang, Mgr., Pittsburgh West Job Ctr, 320 Bilmar Dr., Pittsburgh, PA 15205. JO #8042891.

Programmer/Analyst - Design and program Windows interface in Delphi for customer service program with object-oriented languages for VAX system using VAX/VMS, ACMS, and DECForms. Develop CTI applications with Switch programming. Develop client script to interface with VRU. Develop class hierarchy & relationship for Windows applications on specification issues using MSSQL and Lotus Notes. Prepare production and user documentation. Also work on on-site testing sessions with time tables. Req. B.S. in Comp. Sci. plus 1 yr exp. in job offered. Sal. \$55k/yr. Resume to: Leticia Leinard, John H. Harland 5096 Panola Industrial Blvd. Decatur, GA 30035.



TRIAD DATA INC./RENAISSANCE WORLDWIDE

Triad Data Inc./Renaissance Worldwide places talented professionals with Fortune 100 clients nationwide. Our Professional Services Division has opportunities for **Programmer/Analysts, Systems Analysts and Software Engineers** with the following skills:

Cobol (IMS or DB2) ■ PL1 ■ CICS ■ Adabas/Natural Unix ■ C/C++/Java ■ CNE ■ Technical Recruiters Smalltalk ■ Peoplesoft ■ Sybase Developers Lotus Notes ■ Windows NT ■ Visual C++ PC Support/Help Desk ■ Oracle DBA ■ Delphi Informix Developers ■ Internet Developers ■ Oracle Systems Administrators-Unix, Windows NT, Novell

Multiple positions are available in the following metropolitan areas:
■ Boston ■ Madison ■ Milwaukee ■ Minneapolis
■ Austin ■ New York City ■ Atlanta ■ Dallas

We offer medical/dental insurance, vacation, 401K, referral bonuses, and more. For immediate consideration, send/fax your resume to **M. Jackman, Triad Data, Inc./Renaissance Worldwide**
515 Madison Ave., Suite 1810, New York, NY 10022
FAX: 212-832-7091

e-mail: mjackman@nyc.triaddata.com
http://www.triaddata.com

Programmer Analyst (Unix Networking/Sys. Admin. & Sys. Prog.): Install, customize & fine tune performance of operating sys. on heterogeneous platforms. Achieve connectivity of workstations using networking technologies. Perform sys. configuration mgmt. for both h'dware & s'tware. Provide user support & network trouble-shooting services. Carry out performance tuning of application packages such as Relational Database Mgmt Systems (RDBMS) under Unix operating system. Manage TCP/IP based services such as NFS, NIS, TFP, TELNET, etc. Perform network mgmt. using SNMP & related tools. Ensure fault tolerant printer services & back-up mgmt. procedures. Utilizing knowl. of installation of WAN connectivity w/heterogeneous h'dware platforms using routers &/or gateways over leased & dedicated circuits. Using knowl. of internals on operating sys. for patching & coding device drivers & network program/g using IP/PPX, TLI, Streams & SOCKETS. Req: Bachelors degree in comp. sci. - math/engr'g/sci./bus.-commerce (or equiv.) & 1 yr exp in job offered or as software engineer/systems analyst. Must have appropriate combination of skills as follows: 1 of A & 2 of B or 1 of D; or 1 of A & 2 of B & 2 of C; or 1 of A & 2 of C & 2 of D as follows: A) Operating Sys.: IBM AIX, HP-UX, Sun Solaris, DEC Open VMS/Unix, SCO Unix/ODT, USL Unix SVR4, UnixWare; B) LAN/WAN Connectivity/Networking Protocols: TCP/IP, IPX/SPX, NFS, Bridges, Routers, Gateways, X.25, X.400, ISDN, ATM; C) System/Network Prgrm'g: Perl, Korn, Shell, C Shell, RCP, TLI, Streams, SOCKETS, API & toolkits, DDK, AWK, SED, LEX, YACC; D) Networking techs: Ethernet, Token Ring, FDDI; high mobility preferred (multiple positions). 40 hrs/wk; \$55,300-\$65,000/yr. Report/submit resume to Mgr., Washington Job Ctr, Millicent Ctr, Ste. 150 LL, 90 W. Chestnut St, Washington, PA 15301. JO #9089011.

SOFTWARE ENGINEER Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in Java, Shell Programming, TCP/IP and C. Requirements: Masters Degree in Computer Science or related field and two years experience as a software engineer, knowledge of Java, Shell Programming, TCP/IP and C. Salary: \$57,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Mr. Tom Dembosky, Indiana Job Center, 350 N. Fourth Street, Indiana, PA 15701, Job No. 2021828.

Programmer Analyst - Oracle Specialist - Multiple Openings
Structured systems analysis, design, development, testing, quality assurance, implementation, integration, maintenance and support of large volume online complex integrated client-server based business, financial, banking, manufacturing and other commercial application systems in a multi-h'dware/multi-s'ware environment using centralized or distributed database systems using Oracle Relational Database Management Systems (RDBMS) and related software. Design of large application systems and databases in a Cooperative Development Environment (CDE); and analysis, design and development of applications using CASE (Computer Aided Software Engineering) tools. Bachelor's Degree (or equivalent) in Computer Science-Math/Engineering/Science/Business-Commerce and 1 yr. experience in job offered or as Software Engineer/Systems Analyst are required. Must have appropriate combination of skills as follows: 1 of A and 3 of B, or 2 of A and 2 of B. A) includes Oracle RDBMS, Oracle CASE tools (Designer, Dictionary, Generator), CDE 2, Oracle Financials; B) includes PRO*C, SQL*Forms, SQL*Reportwriter, SQL*Plus, SQL*Menu, PL/SQL. High mobility preferred. 40 hrs/week, 8 am - 5 pm. \$55,300 - \$75,000 per year. Qualified applicants should contact or send resume to Mr. James Mackin, Actg. Manager, Pittsburgh North Job Center, 1122 Western Avenue, Pittsburgh, PA 15233. Refer to Job Order #9089022.

SOFTWARE ENGINEER Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in PowerBuilder 5.0, Developer 2000, Sybase and C. Requirements: Bachelor's Degree in Computer Science or related field and one year experience as a software engineer, knowledge of PowerBuilder 5.0, Developer 2000, Sybase and C. Salary: \$57,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Mr. Tom Dembosky, Indiana Job Center, 350 N. Fourth Street, Indiana, PA 15701, Job No. 5021462.

TEMP for LIFE

By Leslie Goff



Lifestyles Of The Rich (Maybe) And Famous (Or Infamous)

Leaving the corporate fold for a career in consulting can be very appealing on those days when your boss is screaming, your co-workers are slacking off and your mind is swimming with all the injustices of the workplace. But launching a successful consulting business requires a lot more than giving two weeks' notice and hanging out your shingle.

CONTRACTING AND CONSULTING

The information technology contracting grass isn't always greener. We spoke to five consultants who do a variety of 1099 and W2 projects about what it takes — and what it takes out of you — to strike out on your own.

CONSULTING'S LITTLE INSTRUCTION BOOK: FIVE SUPER SUGGESTIONS

① There's consulting, and then there's the business of consulting.

"You need a business plan, and you need to rethink that plan every few months," Schur says. "And you may miscalculate and get stuck in an eddy. Even if your plan is right, your timing may be wrong."

② Consultants aren't hired to suggest solutions.

"I have not yet met a manager, or anyone else for that matter, who doesn't know how to 'solve' a problem," Blanpied says. "My job is to implement that solution."

③ The personal is political.

"Companies will tolerate prima donna employees, but not prima donna consultants: Ego is the consultant's No. 1 enemy," Schur says.

④ Learn to live with the limitations of a contract.

"Sometimes you have to implement a solution that you know isn't the best one, and that is frustrating," Blanpied says. "But your contract is to deliver A, B and C, and a contract is a contract."

⑤ Managing your career is up to you.

"Once you make the commitment to consulting, no one is going to hold your hand anymore," Gainer says. "You have to manage your own time, education and finances. And your most valuable partners will be a CPA, a travel agent and, in some cases, an agency broker."

MYTH BUSTERS: THE BIG MISCONCEPTIONS ABOUT IT CONSULTING

► Consulting will make you rich.

"All things considered, I would probably make more money over the long haul being an employee, with benefits and stock options all paid for by my employer," Pape says. "There is a tremendous amount of overhead involved in owning and running your own business, and it requires a lot of nonbillable time to stay successful. Most clients have no clue about that — they still tend to compare the dollar amount against [the salary] they pay their employees."

► Consulting is a risky business.

"If you're a person that loves challenge and opportunity, you can be a good consultant," Kelly says. "There are plenty of opportunities out there."

THE GOOD, THE BAD AND THE UGLY: PROS AND CONS OF CONSULTING

PROS

► The freedom to determine your future.

"I get to decide whether I am going to take my next job in downtown New York or around the corner in Atlanta," Kelly says. "Sometimes the decision is based on my personal life — like what does my son need over the next

six months? And sometimes it's based on the work experience because I can rely on my husband to take care of things.

► The flexibility to combine business travel with personal travel.

"Consulting gives me the freedom to lecture at professional development seminars overseas and then take some time off to explore," says Schur, an avid traveler.

► Exposure to a wide range of technologies, methodologies and management styles.

"In the five years I've been in consulting, I've been exposed to many wildly different corporate environments, design philosophies, tools and tasks," Blanpied says. "Working with different design philosophies, you learn what's important and what isn't, and it also makes you fit into a new organization more quickly."

CONS

► Having to deal with unscrupulous staffing agencies.

"Sometimes I dislike their tactics," Kelly says, explaining that agencies often understate the requirements of

a job to secure a lower rate from the consultant. "Once I arrived on-site to find that the company wanted me to do a totally different level of work than the agency had stated. . . . I did the work and considered it a lesson learned. Now I am very careful about the level of effort required."

► The constant travel and its associated hassles.

"No matter where you live, it seems that your clients are inevitably somewhere else," Gainer says. "If I add it all up, I probably spend eight to nine months of the year on the road."

► You're always on the job.

"I'm never really 'off,'" Pape says. "Even when I have time between projects, I end up spending a lot of it on business-related pursuits, like research, promotion, self-study and the

CAST of CONSULTANTS (in alphabetical order)

DAVID BLANPIED, 44, Norwalk, Conn. In IT since 1992; consulting since 1994; specializes in developing database front-ends.

JEFF GAINER, 39, president and founder of ASC Ltd. in Hamilton, Mont. In IT since 1984; consulting since 1991; specializes in project management, quality assurance and Visual Basic programming.

KAY KELLY, 46, Atlanta. In IT since 1970; consulting since 1978; specializes in business performance improvement, with experience in all technologies from mainframes to the Internet.

LORI PAPE, 42, (LOCATION TK). In IT since 1978; consulting since 1992; specializes in developing device drivers and systems software for Windows NT.

STEPHEN SCHUR, age withheld, vice president and co-founder of Productive Methods Inc. in San Mateo, Calif. In IT since 1967; consulting since 1979; specializes in electronic-commerce applications and decision-support systems.

more mundane things, like paperwork. . . . And on more than one occasion, I've been on a 'real' vacation and ended up being on call for a client or logging in remotely for them. I never did that as an employee, but it's hard not to do when you are the owner of the company." □

Goff is a freelance writer in New York.

HEY,

REGIONAL SCOPE

Austin, Houston & San Antonio

check it out!

If you want to land a choice IT job in southern Texas, you better do your homework on the company first

By Emily Leinfuss

LOOKING FOR an IT job in Austin, Houston or San Antonio?

Learning as much about an employer's technologies and business issues *before* the job interview can mean all the difference in whether you get an offer. There are easy ways to learn about southern Texas employers. It just takes a continuous process of drilling down for more information until you get to the company, technology and job that's right for you.

HOW TO FIND IT

The first place to find information about companies, industries and technologies is the Internet. Virtu-

ally every company has a presence on the Internet now. That makes it easy to find company profiles, including current job listings and descriptions, and to take a peek at the technologies they're using.

And that's no "if-I-find-the-time" advice. These days, employers expect that all job applicants, especially in the information technology ranks, will visit their Web site. They fully expect you to at least have gained general information about the company from the corporate Web site, says Gary McGowen, manager of technology customer support at Arthur Andersen & Co. in Houston.

"Our Web page shows all of what we do, our vision and our scope of customers," McGowen says. And if you expect to sit across the interview table from McGowen, he says it's imperative that you learn beforehand that the company does much more than accounting.

There's also a plethora of robust technology job search sites on the Web. Those can be a gold mine of information on IT organizations in southern Texas.

"By searching job markets or technologies through job listings, you can make inferences about what companies are doing with their projects and technology," says Clint Tomlinson, president of recruitment firm Technical Scouts in Austin. For example, "If you are interested in Java Web development, once you have found a detailed job description from a company, you know more about what they are up to," he says.

Opportunity is BIG in Southern Texas

SAN ANTONIO

The San Antonio IT job market includes companies in insurance, health care and the military. And

then there's United Services Automobile Association (USAA), jokes Roy Forsstrom, IT director at ASI/CaroTech Inc., a computer mapping services company in San Antonio.

But there's truth in the humor. USAA, a worldwide insurance and financial services family of companies that serve the military, is a huge presence in San Antonio, says Jim Burgess, USAA program manager of IT recruiting.

Burgess recently developed USAA's dedicated IT recruitment program. What jobs are available at USAA and in the San Antonio job market? "Pick one, and we are looking for it," Burgess says. That includes skills from mainframe IMS, MVS, Cobol experience to client/server, C++, Visual Basic, Unix, Oracle and object-oriented design to good Internet development, he says.

AUSTIN

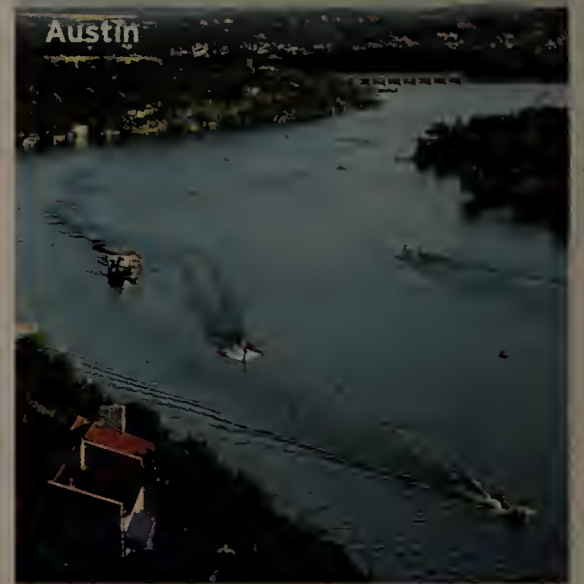
Sometimes it seems as if Austin is made up entirely of musicians and technicians (and sometimes the two are one and the same). There's a strong group of start-up, high-tech companies here, mixing with established companies such as Dell Computer Corp.

The city hires a lot of technical professionals, Tomlinson says, and the demand for skills is wide and varied. C++ is always a mainstay. Unix and Windows background is needed, and there's growing demand for Java developers, he says.

HOUSTON

In Houston newspapers and business periodicals, the common theme is the labor shortage. Houston is feeling the squeeze from a mass exodus of professionals caused by the downturn in the energy industry in the late 1980s, says Steve Satterwhite, president of Entelligence Inc., an IT professional contract firm in Houston.

"We see a wide gamut of skills



Mining job data in southern Texas

Drill for nitty-gritty information on IT organizations using these online job tools:

CareerTech.com
www.careertech.com

An online publication with background information on a wide variety of technology careers.

The Virtual Job Fair
www.careerexpo.com

Features more than 20,000 high-tech career opportunities

Computerwork.com
www.computerwork.com

A job board and resume bank that offers localized sites.

Computerworld
www.computerworld.com
Computerworld and other trade publications offer the latest news about new projects and technologies, and the IT Careers sections may list jobs or offer job-search features.

Other, more general, job sites that list technology positions include:

CareerAmerica
www.careeramerica.com
Monster Board
www.monsterboard.com

needed in the area — robust knowledge of Microsoft NT technology and Exchange server and the whole suite of [Microsoft] back-end products is strong," he says. "There are quite a few [enterprise resource planning] projects getting off the ground, calling for SAP, PeopleSoft and Oracle developers. And in the middle, a continuing demand for general client/server skills like C++, PowerBuilder and Visual Basic." □

Leinfuss is a freelance writer in Sarasota, Fla.

AUSTIN, HOUSTON, SAN ANTONIO CAREERS

Opportunities
in Texas

AS/400 Internet
C/C++ Oracle
Client/Server Peoplesoft
Cobol PB
Lotus Notes Sybase
IT Mgr Unix

National
ProSource

cjob@nationalprosource.com
www.nationalprosource.com
Fax: 713-272-8811

One

Multiple facilities.
Unlimited opportunities.

POWERFUL
COMBINATION

Realize a more fulfilling career at Memorial Hermann in Houston, Texas, one of Texas' largest not-for-profit healthcare systems.

INFORMATION SYSTEMS:

SR. TECHNICAL ADVISOR

Requires comprehensive knowledge of computer programming/analysis techniques, system software (DOS/VSE, CICS, VSAM, DL/I, ALC, COBOL) and highly technical areas of data processing.

SR. APPLICATIONS SPECIALIST

Requires 3 years technical software support or Windows '95 and MS Office applications; and ability to manage large projects. NT Networking knowledge a plus. Prefer Microsoft Products certification and 2 years development experience at a work group level utilizing VB/C++ and MS Development Suite of products.

APPLICATIONS SPECIALIST

Requires 3 years technical software support of Windows '95 and MS Office applications. NT Networking knowledge a plus. Prefer Microsoft Products certification.

SR. COMPUTER OPERATOR

Requires 2 years experience specializing in MVS/OS and 4 years experience as a computer operator.

Interested? Contact us at: Memorial Hermann Healthcare System, Human Resources, 7737 Southwest Freeway, Suite 415, Houston, TX 77074, 713/776-5525, fax 713/776-5665, e-mail: HUMAN_RESOURCES@mhhs.org.

Visit our website at: www.mhhs.org

An equal opportunity employer m/f/v/disabled.

Memorial Hermann
HEALTHCARE SYSTEM

THE TIME IS NOW
THE COMPANY IS IXC.

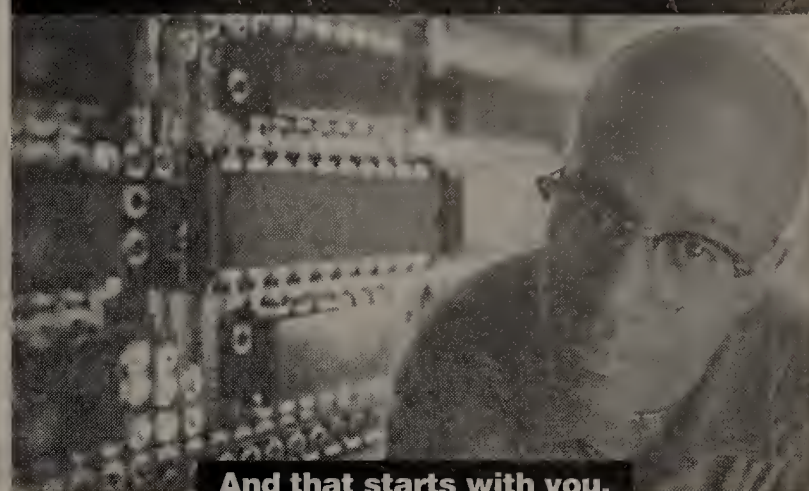
For true career challenge and future-directed success, there's no better time than now to join IXC Communications, Inc., a uniquely innovative telecommunications company. We're heading into the new millennium with a real sense of purpose and growth. If you'd like to be part of the excitement, consider the following positions:

- Manager of Project Architecture
- Manager of Client Services
- Manager of Enterprise Architecture
- Oracle Database Developer (PL/SQL-Oracle-C++)
- Programmer/Analyst (SQL, PL/SQL-Oracle Forms-Developer 200)
- Oracle Financials Applications Analyst
- PBX Administrator
- Desktop Computing Support Specialist

We offer an attractive salary/benefit package and excellent growth potential with a dynamic industry leader. For confidential consideration, please send resume, indicating position of interest, to: IXC Communications, Inc., Attn: Human Resources, 1122 Capital of Texas Hwy. S., Austin, TX 78746. Fax: (512) 328-0624; E-mail: j1ence@ixc-comm.com Also visit our website at <http://www.ixc-comm.com> EOE

IXC
COMMUNICATIONS, INC.

WE INVEST IN WHAT MAKES US SUCCESSFUL.



And that starts with you.

Southwestern Bell is a part of SBC Communications, a global leader in the telecommunications industry. We're changing the world for over 90 million customers with pioneering advances in areas ranging from local and long-distance services to wireless communication and high-speed data networking. All of which adds up to a new opportunity for us. And plenty of variety for you. If you're an IT professional looking for the most exciting opportunities in the industry, SBC is the place you'll find them. So, join us and bring it all together at Southwestern Bell.

IT CAREER EXPO

Thursday, November 5th, 11am - 2pm & 5pm - 7pm

Saturday, November 7th, 9am - 1pm

Richardson Telecom Corridor,

1125 East Campbell Road, Richardson, TX

If you're the best in the IT business, Southwestern Bell has many exciting opportunities for you. Hiring Managers will be on-site and available to interview. To schedule an appointment, send your resume today!

www.bringITtogether.com

Please visit our Web site to learn more about specific positions available. E-mail: resumedl@txmail.sbc.com or fax your resume to: Attn: Career Expo at (972) 952-8851. For more information, please call our INFO LINE at (214) 742-EXPO. Southwestern Bell is an Equal Opportunity Employer.

Your friendly neighborhood
global communications company.™

 Southwestern Bell

Technical



**SHOPPING FOR AN I.T. CAREER?
TRY H-E-B GROCERY
COMPANY**

High profile challenges. Advanced technologies. A supportive team environment. That's just some of what you'll experience at H.E. Butt Grocery Company in San Antonio, Texas. With more than 248 stores across Texas and over 45,000 partners (employees) H-E-B is a privately held, \$6 billion industry leader whose rapid growth offers rewarding opportunities for I.T. professionals. H-E-B offers GREAT pay and benefits for GREAT partners and outstanding career growth potential.

Our I.T. department performs very innovative, leading-edge work on our multi-platform network of systems enabling H-E-B to grow even further in the next millennium. We offer opportunities to excel in areas such as:

- Data Base Administration, Data Modeling
 - Informix, DB2, Redbrick
- Distributed Applications Development
 - C, C++, VB, Java
 - Informix, DB2, Sybase
- ERP Application Implementation

If you are interested in any of these positions, fax your resume to: Corporate Recruiter/ISPM, (210)938-7619, or e-mail your resume to HEB.CAREERS@HEB.COM

Visit our web-site at WWW.HEB.COM



We are an equal opportunity/drug-free workplace

computerworldcareers.com

COMPUTERWORLD
CAREERS

AUSTIN, HOUSTON, SAN ANTONIO CAREERS

OUR WORLD
REVOLVES
AROUND YOU.

INTEGRATION SERVICES, INC. is owned and operated by programmers who understand and provide what programmers want...

Stability...

- Success in the technical consulting industry since 1988.
- Client-driven business applications.
- Outstanding salary, PAID Medical/Dental/Vision PPO for entire family; life, LTD, matching 401(k), awards...

Growth...

- Opportunity to learn new skills.
- Administrative and sales support.

Opportunity...

- Profit Sharing, Commission, Bonuses
- Expansion into new markets.



We are seeking energetic, confident individuals with at least 3 years experience with these or related skills...

**RPG/400 • JDE • C++
Oracle • VB/Access • SQL**

If you're looking for a company with aggressive goals in **DALLAS, HOUSTON, AUSTIN, SAN ANTONIO, DENVER, PHOENIX OR ATLANTA**, who rewards employees based on resourcefulness, send your resume to:

DavidWarner@intsvcs.com
222 W. Las Colinas Blvd. #265
Irving, Texas 75039
Fax: 972-831-9882
www.intsvcs.com

GET AIRBORNE WITH
CATAPULT SYSTEMS!

Catapult Systems designs and develops business solutions for some of the hottest technology companies in Austin, Texas. Catapult specializes in Client/Server, Internet and Database technologies, and is one of the fastest growing companies in Austin. If you are an expert in one of the following areas, you owe it to yourself to see how Catapult can launch your career:

Software Developers

Visual Basic
PowerBuilder
Delphi
Silverstream

DBAs

SQL Server
Sybase
Oracle

Catapult offers competitive salaries, paid vacation, comprehensive benefits, 401K plan and profit sharing. Austin is a mecca for software development and live music, with a great small-town atmosphere and high quality of life. To find out more about joining our team in Austin, e-mail your resume to resumes@launch.com or fax a copy to Liam Collopy at (512) 328-0584.



**CATAPULT
SYSTEMS**

Catapult Systems Corp.
3001 Bee Caves Rd, Suite 220
Austin, Texas 78746
Phone: (512) 328-8181 Fax: (512) 328-0584

E-mail: resumes@launch.com Web: www.launch.com

BUILDING SOLUTIONS

That Build Business.

As a \$225 million premier solutions provider RCG Information Technology is doing more than filling jobs - we're building careers. From management consulting services and application software development to complete Year 2000 products and services, our solutions have Fortune 500 companies relying on our strength and innovation to build their business. Join RCG and begin building your career with an industry leader.

HOUSTON

- SAP
- Y2K
- Q/A TESTERS
- PROJECT MANAGERS
- PEOPLESOFT
- COBOL, PL/I, IMS, DB/DC
- Q/A MANAGERS
- SENIOR MANAGER

AUSTIN

- TIVOLI INSTALLERS OR TESTERS
- SYNON 2E PROGRAMMER W/ COBOL, RPG, AND AS/400
- LOTUS NOTES AND OOMINO APPLICATION DEVELOPER
- ORACLE FINANCIAL ANALYZER
- WEB DEVELOPER W/ PERL, JAVA, HTML, CGI, ASP, 100% TRAVEL
- COGEN DEVELOPER
- VANTAGE ONE DEVELOPER

RCG offers complete training and a diversity of technical environments where you can sharpen your IT skills. For Houston opportunities forward your resume to: RCG Information Technology, 2900 North Loop West, Suite 1300, Houston TX 77092; Phone: (713) 548-1200 Fax: (713) 548-1400; E-mail: kheslin@rcgit.com

For Austin opportunities forward your resume to: RCG IT, 9600 Great Hills Trails, Suite 150 West, Austin, TX 78759; Phone: (512) 502-3026; Fax: (512) 342-2550 E-mail: bigred@prismnet.com EOE

For more information, visit our website at: www.rcgit.com



When was
the last time
a great job
found you?

That's what we thought.

You already know Computerworld as a great resource for career opportunities. Now we're bringing you Computerworld Career Central, the service where the jobs find you.

If you're a software development professional, visit www.computerworldcareers.com, fill out a Member Profile and submit it. We'll find jobs matched to your skills, experience and preferences and send them to you, confidentially, via e-mail. Computerworld Career Central is the hassle-free, cost-free, we-do-the-work-so-you-don't-have-to job matching service that works.

You work hard. Go to www.computerworldcareers.com and let us do the rest.

COMPUTERWORLD
Career Central™
www.computerworldcareers.com

99

TECHNICAL
RECRUITING
& RETENTION
CONFERENCE
COMPUTERWORLD

June 6-9
1999

Palm Desert
CALIFORNIA

for info
1-800-488-9204

FIND
I.T. Consulting
Careers
HERE

COMPUTERWORLD

ANNUAL OPPORTUNITIES IN IT CONSULTING
AND SOFTWARE AND SYSTEMS MANAGED
THE NEW LEAD FOR CONSULTING AND CONTRACTING

Directory of
CONSULTING
EMPLOYERS
Spring 1998

computerworldcareers.com

computerworldcareers.com

COMPUTERWORLD
careers

Technology Doesn't Spark...

IT BURNS.

ROMAC INFORMATION TECHNOLOGY attracts the best technical talent- qualified people to handle all aspects of information technology with varied skills and for varied periods of time- a KnowledgeForce to impact organizations.

SOURCE EDP/SOURCE CONSULTING provide consultants experienced in a wide range of hardware and software environments and are trained to provide cost-effective solutions in the most challenging information technology issues.

...Good thing we found our
Firefighters.



ROMAC INTERNATIONAL
The KnowledgeForce ResourceSM
SourceServices

Romac and Source Services are businesses of Romac International, Inc.

120 West Hyde Park Place

Tampa Florida 33606

813.251.1700

www.romac.com

JAVA SOLUTIONS

**we empower the people
who power the world**

Ernst & Young LLP, the world's fastest growing professional services firm, is also a pioneer in providing leading edge technology-based business solutions through the **JavaTM Service Line** to our clients. As the demand for our services continues to grow, there is a need for key individuals to assume leadership positions within our rapidly expanding **JavaTM Service Line**.

**We are seeking consultants at the following levels for our
New York, Chicago, Atlanta and Dallas locations:**

Senior Manager • Manager • Senior Consultant

To succeed in these roles, the candidates we seek will have clearly demonstrated leadership and possess a strong background in object-oriented analysis, design, and development. Expertise in CORBA, RMI, and object architecture and design in large scale multi-platform environments is essential. Familiarity with the design and development of JavaBeansTM, applets, servlets and applications is necessary, as is the ability to communicate the risks and risk management techniques to clients. You must possess a willingness to travel and demonstrate excellent communication, organization, and interpersonal skills.

In exchange for your expertise, we offer a very attractive salary and benefits package. For consideration, please forward your resume to: **EY Careers, Dept. 11915, 113 Terrace Hall Avenue, Burlington, MA 01803; Fax Toll Free to Dept. 11915: 1-877-4EY-JOBS; or E-mail: dept. 11915@eycareers.com.** Please be sure to indicate the department number on your cover letter and resume for routing purposes. No phone calls please. **Visit our website at: www.ey.com.**

ERNST & YOUNG LLP

Ernst & Young LLP, an equal opportunity employer, values the diversity of our work force and the knowledge of our people.

Our location



and technology are
state-of-the-art.

You can work with the latest software, network products and Internet solutions – and you can also help create them. It's all happening at Kinko's, a 21st-century company offering an entrepreneurial environment, comprehensive training and the resources of a firm that is an international success. We invite you to put your career on a fast track by joining the industry leader at Kinko's corporate office in Southern California. Positions are available immediately for professionals with the following skills:

- Software Development
- Programmer Analyst
- Network Engineer
- Security Engineer
- QA Engineer
- Infrastructure Analyst
- Document Management
- Electronic Commerce
- Data Warehousing
- Client-Server
- IT Systems
- Internet/Extranet/Intranet
- Product Marketing
- Digital Certificates and Key Managements
- Customer Products/Services
- LAN/WAN
- Cisco
- 3Com
- TCP/IP
- Novell
- Unix
- Solaris
- HP/UX
- NT
- Firewall Systems
- Encryption Schemes
- Application Gateways
- Proxy Servers
- Network Monitoring Tools
- C/C++
- Visual Basic
- SQL
- Java
- Perl
- Lawson
- Cobol
- Informix
- POS

We offer an attractive compensation package, including bonus incentives and outstanding benefits, an enriched 401(k) savings plan, on-site childcare, and cafeteria-style health options. Please send/fax/e-mail your resume, with salary history, in confidence to: Kinko's Inc., Attn: HR, 255 W. Stanley Ave., Ventura, CA 93002; Fax: (805) 652-4329; Job Hotline: (805) 652-3410; E-mail: careers@kinkos.com

Visit our Web site at: <http://kinkos.newjobs.com>

kinko's[®]

EOE M/F/D/V

sap (sap) n. 1. The liquid that circulates through plant, carrying food substances. 2. Vigor: energy. 3. Slang. A gullible person; dupe.

SAP has been re-defined!

Call us for info on positions worldwide in all phases of SAP. Let US help YOU help our clients in their re-engineering efforts. We need high calibre talent in all modules, functional and technical and BASIS. Long and short-term assignments.

1975 N. Park Place, Suite 100 • Atlanta, GA 30339

800-599-9550 • 770-955-1714

FAX: 770-937-0423 • 800-457-9776

E-mail: slc@ga.structuredlogic.com

EOE • MEMBER NACCB

AN **IntelliMark[™]** COMPANY
IT BUSINESS SOLUTIONS

Software Engineer responsible for developing a standard set of multi-user, multi-facility and multi-currency integrated systems for MIS accounting, supply chain management, inventory control, order entry and processing. Specific duties: analyze requirements, design and develop software solutions for Supply Chain Management Systems; develop programming environment interfaces to provide automatic collection of software engineering quality control data and reports acquired from physical inventory organization system; develop Relational Database SQL based data warehouse systems with optimized user reporting and self-monitoring data load modules with detailed logging and pager callout; develop complex worldwide web graphical form based user applications for Supply Chain Management using Perl under UNIX, with interfaces to Oracle Relational Database using SQL under UNIX; develop distribution center warehouse management and reporting systems and vendor managed inventory control systems including order entry and processing; implement Software Engineering Initiative (SEI) and software quality standards for Information Systems (IS) in a variety of languages and operating systems; develop interfaces between purchased or newly developed software and our existing systems; provide maintenance of existing supply chain management systems and management information systems accounting packages, written in COBOL under VMS, C under UNIX with scripting done using Bourne Shell, C Shell and Korn Shell, QuickBasic under MSDOS with scripting done using MSDOS Batch. Some packages also written in Informix 4GL. Software maintenance using software configuration management methods and tools such as RCS. Also use awk & sed for day-to-day programmable editing and TCP/IP tools ftp, rsh, telnet and uucp for distributed systems interaction. 40 hours, 8:00am to 5:00pm, \$60,900/year. Bachelor's degree in Computer Science or Electrical Engineering required as well as four years of experience as a Software Engineer or four years of experience as a Programmer and/or Senior Programmer or any combination. We will accept a foreign awarded university or college degree which is academically equivalent to a U.S.-awarded Bachelor's degree in Computer Science or Electrical Engineering as judged by an educator or credentials evaluation service. In lieu of a Bachelor's degree in Computer Science or Electrical Engineering, we will accept applicants with 1 and 1/2 years of college majoring in Computer Science or Electrical Engineering and six years of experience as a Senior Programmer and/or Programmer and/or any combination thereof. All applicants must have experience in the following: a) developing a standard set of multi-currency, multi-user, multi-company integrated systems for: MIS accounting, supply chain management, order entry and processing; b) the following programming fields: operating systems UNIX, MSDOS, VMS; languages Perl, C SQL, Awk, QuickBasic, Informix 4GL; scripts MSDOS Batch, Bourne Shell, C Shell, Korn Shell; tools TCP/IP. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of both resume and cover letter to Illinois Department of Employment Security, 401 South State Street-7 North, Chicago, Illinois 60605, Attention: Joan Sykstus, Reference # V-IL-19581-S. No calls. Employer Paid Ad.

SOFTWARE ENGINEER

Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in Visual C++, MFC, TCP/IP and C. Requirements: Bachelor's Degree in Computer Science or related field and two years experience as a software engineer, knowledge of Visual C++, MFC, TCP/IP and C. Salary: \$57,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Mr. Terry Kinney, Armstrong County Job Center, 1270 N. Water Street, PO Box 759, Kittanning, PA 16201, Job No. 9089212.

IT Consultants & Contractors World Conference & Exposition

**The Nation's Largest Professional
Development & Career Forum
for IT Consultants**

**Register Now
FREE EXPO PASS!**
Our Last Event Sold Out!
www.itccexpo.com

**November 19-20, 1998
Burlington Marriott • Boston**
**February 11-12, 1999
Hyatt O'Hare • Chicago**

*Spend a few hours
and drive your
career ahead!*

- Meet with over 60 of the nation's top IT consulting firms.
- Attend informative workshops and sessions
- Hear from industry thought leaders
- Network with your colleagues

REGISTER TODAY FOR A FREE EXPO PASS
Thursday, November 19

*FREE Admission to the Following Keynotes & Special Sessions
PLUS the ITCC Exposition*

Keynote Speakers

Hot Tools Hot Trends: A Roadmap for Success

John Gidman, CTO, Evergreen Funds

The New Work Style

Bob Ziegel, Publisher & Tony Bogar, Contract Professional Magazine

Establishing or Expanding Your IT Consulting Practice

R. Max Steiner, President Brevity Communications, Inc.

Special Panels

Best Practices of IT Consultants & Consulting Firms

David Mineo, New England Chapter of NACCB

How to Succeed as an Independent IT Consultant

John Desmond, SIGS Publications

After Hours Birds of a Feather Sessions

Meet with Conference speakers, industry experts, and your peers on a wide range of subjects.

SEE WEB SITE FOR DETAILS: www.itccexpo.com

**For a Free Expo Pass and Brochure Call: 508-870-5858 or
Visit our Web Site: www.itccexpo.com**

Premier Association Co-sponsor

New England Chapter of the



National Association of Computer Consultant Businesses

Premier Media Co-sponsor

**CONTRACT
PROFESSIONAL**

Corporate Co-sponsor



MEDIA CO-SPONSORS

Boston Software Newspaper
Chicago Software Newspaper
Computerworld c@reers
Contract Employment Weekly
developer.com

DICE
Dr. Dobbs Journal
InfoWorld
Intelligent Enterprise

IT Consulting Newsletter
Network World
SOFTWARE Magazine
www.ICEnationwide.com

Contractors

For more than 25 years, CPL WorldGroup has supported customers across the U.S. with top talent. Are you ready to join us? We need contractors (Programmer Analysts to Systems Analysts) with the following skills:

- NATURAL/ADABAS
- OOD/OOP
- PEOPLESOF
- DBA's — ORACLE
- ORACLE
- OR ADABAS

Interested? FAX or e-mail your resume to:

CPL WorldGroup, Inc. 1990
N. California Blvd. Suite 950.
Walnut Creek, CA 94596:
FAX 925/472-4904:
contract@cplworldgroup.com.



Software Engineer - Design & deploy data communications network system for airlines, including analysis of user requirements & development of procedures to support Network Engineering Manager (NEM) system, utilizing experience in NEM systems, UNIX based CAD application, SUN SPARC platform, Pro/C, Oracle & SQL/ESQL. 40 hrs/wk; 9-5; \$60,762/yr. Job in Fort Worth, TX. Reqmts: MS in Computer Science with one year experience in the job offered, OR BS in Computer Science with 3 years experience in the job offered. Apply at the Texas Workforce Commission, Fort Worth, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, J.O.# TX0519544. Ad Paid by An Equal Opportunity Employer.

SOFTWARE ENGINEER
Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in Visual Basic, Oracle, Crystal Reports and C. Requirements: Bachelor's Degree in Computer Science or related field and two years experience as a software engineer, knowledge of Visual Basic, Oracle, Crystal Reports and C. Salary: \$57,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Mr. Tom Rusnack, Charleroi Job Center, 10 Paluso Drive, PO Box 210, Charleroi, PA 15022, Job No. 2021829.

Programmer/Analyst (2 positions available) sought to analyze, design, develop, implement and support customized software applications for clients in a client-server environment. Requirements: Bachelors or equivalent in Computer Science or related field + 2 yrs/exp as a Programmer/Analyst or 2 yrs/exp in software application development. Such experience must include: C and C++. Applicant must be willing to travel to client sites within 60 mile radius. Hours: 40/wk. Salary: \$60,000/yr. Send 2 resumes to: Case#: 80113, PO Box #8968, Boston, MA 02114.

SOFTWARE ENGINEER
Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in Visual Basic, Oracle, C and Crystal Reports. Requirements: Masters Degree in Computer Science or related field and two years experience as a software engineer, knowledge of Visual Basic, Oracle, C and Crystal Reports. Salary: \$62,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Mr. Stan Majesky, Greene County Job Center, 653 East High Street, Waynesburg, PA, 15370, Job No. 9089484.

Programmer Analyst (10 Openings) (J.O.N. 6021465) Plan, develop, test and document computer programs; evaluate user requests for new or modified programs; and use Telon, DB2 and CICS. Reqs. a Bachelor's Degree (or its foreign educational equivalent) in Computer Science, Systems Analysis, Computer Information System, Computer Applications, Computer Engineering, Electrical Engineering, Applied Physics (Computer Electronics), Electronic Engineering, Electronics and Communication or Mathematics, plus 1 yr's exp. in the job offered. \$60,000.00/yr., 40 hrs./wk., M-F, 9a-5p. Send resume along with J.O.N. to Stan Majesky, Manager, Greene County Job Center, 653 East High Street, Waynesburg, PA 15370

Software Engineer (two openings) - Design, develop Object Oriented systems & databases in client-server environment for business/Internet applications using C++, Java, JDBC, Java scripts, Owas, PL/SOL, Pro*C, TCP/IP, Sockets on Unix/Windows NT based systems. Design Database ER models and maintain software using VSS/PVCS. Req. M.S. in Comp. Sci. plus 1 yr exp. as software engineer. Sal. \$65k/yr. Resume to: Narayana Rekapalli, Omnisoft Inc. 1265 Compass Pointe Crossing, Alpharetta, GA 30005.

Programmer Analyst. Analyze, design, develop, modify, test and debug software. Utilize COBOL with CICS, IMS or DB2. Bach. degree, + 2 years exp. req'd. Send resume to: Christine Chiodo (AZ), Broadreach Consulting, Inc. 676 East Swedesford Rd, Suite 200, Wayne, PA 19087.

PEOPLESOF CONSULTANTS

**\$40,000 TO \$400,000
LOCATIONS NATIONWIDE**
Retained Search For International Consulting Co. With Offices Located Nationwide & Worldwide. Live Near Any Major City. Travel Varies 10% - 90% Peoplesoft Consulting Experience is Required. Confidentiality is Assured. Send Confidential Resume:

ALLIED SEARCH, INC.
PO. Box 472410
San Francisco, CA 94147
Attn: Don May, Director
Private Fax: 1-415-921-5309
Email: alliedsrch@aol.com

CONSULTANT/PROJECT LEADER. Design, develop, implement and test software for management information systems using client/server technology. Data conversion from FoxPro. Tools: PowerBuilder, Oracle; FoxPro; Windows. BS in Computer Science* + 2 years exp. in job offered required (*BS in any engineering field + 1 year exp. in software development acceptable in lieu of BS in Computer Science). 40 hrs/wk. 9am-5pm. \$50,000/yr. Submit resume to Bureau of Workforce Program Support, PO Box 10869, Tallahassee, FL 32302-0869. RE: Job order number FL-1864431.

computerworldcareers.com

COMPUTERWORLD
c@reers

SENIOR PROGRAMMER/ANALYST to analyze, design, develop, implement, test, maintain and support business applications on VAX/VMS platforms using C, COBOL, Fortran, ACMS, DECforms, Rdb/SQL, CMS and CDD+; Act as the technical lead on multiple projects, analyze user requirements, coordinate the work of junior programmers, and prepare project plans and cost/time estimates. Require: B.S. degree in Computer Science/Engineering, Mathematics, or a closely related field with two years of experience in the job offered or in the related occupation of Programmer/Analyst. Extensive travel to various client sites within the U.S. is required. Salary: \$57,000 per year, 8 am to 5 pm, M-F. Send resume to: Georgia Department of Labor, Job Order # GA 6298459, 1535 Atkinson Rd., Lawrenceville, GA 30243-5601 or the nearest Department of Labor Field Service Office.

Senior Software Engineer: Design, develop enhance and support SS#7 (Signalling System7), ISUP (ISDN User Part), TUP (Telephony User Part), MTP Lower Layers and TCAP (Transition Capabilities Application Part) software according to ANSI and ITU-T specifications. Applications development done on a UNIX operating system using C/C++ and object oriented methodologies. REQUIREMENTS: MS CE/EE/CS Engineering or related, plus three years experience in the job offered or in the related occupation of tele/data communications applications and/or software development. Education or experience must include UNIX, C, Telecomm Protocols such as (SS#7, ISUP, ITU-T) and call processing. Hours: 8:00 AM to 5:00 PM. Salary: \$75,000/year. Send two (2) copies of Resume/Letters of Application to: Job Order #: 99-016 PO Box 989, Concord NH, 03302-0989.

Novell Network Administrator (Miami) Setup Novell n/work users by adding user name login & giving rights to files & directories; estab & maintain n/work printing; create personal & shared n/work storage for data & applic files; provide systematic data backup & retrieval process; install s/w as needed by users; provide tech support to end-users; maintain Co's Novell Network 4.1 n/work; maintain inventory of s/ware, books & manuals; manage & maintain office supplies & inventory. BS in Comp Sci + 2 yrs in job off or in Comp Prgm Admin field. Must have proficiency in MS-DOS, Win 95/311, Novell 4.1. Employer will accept recognized equivalency evaluation in lieu of degree. M-F, 9-5, \$29K/yr. Send resume only to: Bureau of Workforce Program Support, PO Box 10869, Tallahassee, FL 32302-0869, Re: JO No. FL-1831439.

SYSTEMS ANALYST to design, develop, analyze, test, implement and maintain application software systems and databases in a client/server environment using object oriented programming, C, Pro*C, C++, Developer 2000, Designer 2000, PowerBuilder and Oracle under Windows NT and UNIX operating systems. Require: B.S. degree (or equivalent) in Computer Science with two years of experience in the job offered. Extensive travel to various client sites within the U.S. is required. Salary: \$60,000 per year, 8 AM to 5 PM, M-F. Send resume to: Georgia Department of Labor, Job Order # GA 6298432, 2943 N. Druid Hills Rd., Atlanta, GA 30329 or the nearest Department of Labor Field Service Office.

SENIOR SOFTWARE ENGINEER to design, develop, implement, integrate and test application software using Object Oriented Techniques (OMT), RogueWave, Rational Rose/C++, Rogue Wave libraries, Rogue Wave tools. H++, xdb, dbx, Shell Scripts, Sun Workshop, purify, quantify, make, System V IPC on HP-UX and Sun UNIX platforms; Design and develop the object specifications, analyze the use cases and develop object interactions and messages; Document the object models and object interactions for the various phases of the project; Use Navigator/Contracts developed in TCP/IP to communicate with IMS mainframe. Require: M.S. degree in Computer Science, or a closely related field, with one year of experience in the job offered or as a Programmer Analyst. Extensive paid travel on assignments to various client sites within the U.S. is required. Salary: \$81,500 per year, 8:30 am to 5:30 pm, M-F. Send resume to: Roz Alford, CEO, American Systems and Programming Company, Inc., 3495 Buford Highway, Duluth, GA 30097. Attn: Job VG.

CLIENT/SERVER DEVELOPER III to design, develop, test and maintain the client/server OpenHUB interface engine software system using GNU/C, SCHEME, Korn shell script, Oracle and MUMPS on IBM RS6000/AIX and PC platforms; Provide training and technical support for implementation staff and client support staff; Provide product support for customers through Client Support organizations; Support implementation of interface products for mainframe based HCM system (HCM RFT coding, HCM Parser coding) and MUMPS based system. Require: M.S. degree in Computer Science or a closely related field, with one year of experience in the job offered or in the related occupation of Senior Software Application Analyst or other closely related position in the information technology field. Salary: \$60,616 per year, 8 AM to 5 PM, M-F. Send resume to: Georgia Department of Labor, Job Order # GA 6298471, 2943 N. Druid Hills Rd., Atlanta, GA 30329 or the nearest Department of Labor Field Service Office.

SOFTWARE ENGINEER to design, develop, test, implement and maintain client/server based software systems for financial applications using Ingres, Oracle and Sybase; Perform database administration activities in Ingres and systems administration activities for HP-UX; Support existing systems software using QBF, RBF, ABF, SQL*Net, SQL*Star, SQL*Plus, SQL*Reports, SQL*dba, triggers, ESQL, Pro*C, C++ and object oriented methodologies; Utilize UNIX Korn Shell programming, X-Windows, HP Openview running under HP-UX, Solaris and VM/AIX on RS6000, HP9000 and Sun Sparc machines. Require: B.S. degree in Computer Science with five years of progressively responsible experience in the job offered or as a Software Engineer; Extensive travel to various client sites within the U.S. Salary: \$60,000 per year, 8 am to 5 pm, M-F. Send resume to: Georgia Department of Labor, Job Order # GA 6296660, 465 Big Shanty Rd., Marietta, GA 30066-3303 or the nearest Department of Labor Field Service Office.

BAY SEARCH GROUP

National I/S Placement Specialists

VISIT OUR WEB PAGE
www.baysearch.com

Looking for:
Oracle, SYBASE, UNIX,
Visual Basic, PowerBuilder,
Web Developers
1-800-637-5499
Fax: 1-888-737-9889
E-mail:
recruiter@baysearch.com

SENIOR programmer analyst

ITT Industries / Transportation Distribution Services, a Florida corporation is looking for an experienced LANSA / AD individual. The ideal candidate will possess 3-5 years of LANSA / AS400 experience, with heavy concentration on general accounting principles and applications. Individual must be able to work independently and demonstrate exceptional analytical and programming skills. Degree preferred, transportation experience desired.

Send resumé and salary history to
Human Resource Manager, ITT / TDS
2 Corporate Drive, Palm Coast, FL 32137

AS400 Programmer/Analyst

Program in paradise! Bluegreen Corp., NYSE National Real Estate, Vacation Ownership and Mortgage Co., searching for qualified candidate experienced on AS400 & RPG. Payroll & HRM application experience desirable. EOE. Reply to:



Attn: HRM, 4960 Blue Lake Drive
Boca Raton, FL 33431 FAX (561) 912-7915
E-mail jam@icanect.net

Systems Analyst needed for computer software development and consulting firm located in Duluth, Georgia. Job duties include: Analyze, design and develop software applications. Consult on various in-house projects and/or contract basis throughout the U.S. Re-engineer software applications using state-of-the-art tools and techniques. Use COBOL II, MVS/JCL, DB2, IMS database, VSAM database, VS/CICS, INTERTEST, XPEDITOR, Job Scheduler and FILE-AID in MVS/XA/ESA environment. Applicant must have 4 yrs. exp. in job duties described above or as a Systems Analyst or Team Leader to include 4 yrs. exp. designing and developing software applications using COBOL II, MVS/JCL and CICS on IBM mainframe in MVS/XA/ESA environment. Alternatively, will accept a B.S. degree and 2 yrs. exp. in above skill sets. 40hrs/wk, 8:00 am-5:00 pm, Mon-Fri, \$52,997. Send 2 resumes to: Georgia Dept. of Labor, Job Order #GA 6293517, 1535 Atkinson Rd., Lawrenceville, GA 30243-5601 or the nearest Department of Labor Field Service Office.

SOFTWARE ENGINEER to perform analysis, design and development of software applications for engineering and industrial management systems from concept to configuration, requiring use of 3GL/4GL languages, GUI tools, Relational Database Management Systems (RDBMS) and object oriented methodologies in Windows, DOS and UNIX environment; use of C++, Delphi and PowerBuilder as front end tools with Informix, Sybase SQL Server and Oracle as back end engines and programming languages C and SQL in client/server environment; knowledge of databases, transaction controls, debugging, testing, deployment and documentation of developed software applications at client sites. Require: M.S. in Engineering/Computer Science and two years experience in the job offered or as Programmer/Analyst. Salary: \$60,000 per year, 8 am to 5 pm, M-F. Mail resume to: Georgia Department of Labor, Job Order # GA 6294410, 465 Big Shanty Road, Marietta, GA 30066-3303 or the nearest Department of Labor Field Service Office.

APPLICATIONS PROGRAMMER to create and modify computer programs for network plotting solutions applications for CAD packages in a client/server environment using object-oriented methodologies, AutoDirect libraries and Microstation libraries in a Watcom C/C++ environment; Develop a PRF Generator using object ARX and ADS for AutoCAD; Develop input drivers to process various file formats such as AutoCAD DWG files and Microstation DGN files in DOS and Windows NT environments; Perform source code management using SourceSafe; Develop user interfaces using Visual C++. Require: B.S. degree in Computer Science with one year of experience in the job offered; Required experience must include computer program development for plotting applications using C/C++, Visual C++, AutoCAD and AutoDirect libraries. Salary: \$49,640 per year, 9 am to 6 pm, M-F. Apply by resume to: Georgia Department of Labor, Job Order # GA 6296551, 2943 N. Druid Hills Rd., Atlanta, GA 30329 or the nearest Department of Labor Field Service Office.

SENIOR SOFTWARE ENGINEER to lead a team of programmers to design, develop, test and maintain application software for Revenue Management System using C/C++, object oriented programming in a client/server UNIX environment with GUI, Oracle and Ingres relational databases, Korn/C shell scripts and languages C/C++, SQL, 4GL and Perl using database systems, computer architecture, object oriented design and software engineering concepts; evaluate clients' needs, analyze requirements and develop software systems following design specifications. Require: M.S. in Computer Science and one year's experience in the job offered or as Programmer/System Analyst/Network Manager (in any combination). Salary: \$65,000 per year, 9 am to 6 pm, M-F. Mail resume to: Lynn Howard, Director of Employment, Talus Solutions, Inc., 4751 Best Road, Suite 300, Atlanta, GA 30337 (Job Code MH98).

Consultant Software Engineer/Developer to perform lead role in application and database design and implementation of projects using Oracle products like Oracle Developer 2000, Designer 2000, database applications using PL/SQL etc., develop critical components of Application system, integrate with other modules, develop and implement test plans, provide technical assistance to business units and manage vendor relationships. Code complex SQL procedures and perform query optimizations. Requires M.S. in Computer Science, Electrical Engineering, Math, or Statistics and three (3) years experience in job offered or three (3) years experience in applications development and implementation OR B.S. in Computer Science, Electrical Engineering, Math, or Statistics and five (5) years experience in job offered or five (5) years experience in applications development and implementation. Candidate must also possess demonstrated expertise in database design using CASE tools; demonstrated expertise developing graphical user interfaces (GUI) using Developer 2000; and demonstrated expertise in database application development in PL/SQL or SQL. Salary: \$79,000/yr; Mon-Fri, 9:00AM-5:00PM. Send two (2) copies of resume to Job Order #98-275, P.O. Box 989, Concord, NH 03302-0989. Applicants must be workers eligible to accept employment in the United States on a full-time basis.

Programmer Analyst needed for computer software development and consulting firm located in Duluth, Georgia. Job duties include: Analyze, design, develop, implement and test computer software applications. Consult on in-house projects and/or contract basis throughout the U.S. Use COBOL II, MVS/JCL, DB2, IMS database, VSAM database, VS/CICS, INTERTEST, EXPEDITOR, Job Scheduler and FILE-AID on IBM mainframe in MVS/XA/ESA environment. Applicant must have a B.S. in Mathematics, Engineering or Computer Science with 2 yrs. exp. in the job duties or 2 yrs. exp. as a Systems Analyst, Programmer Analyst or Consultant to include designing and developing computer applications using COBOL II, VS/CICS and DB2. 40hrs/wk, 8:00 am-5:00 pm, Mon-Fri, \$52,997. Send 2 resumes to: Georgia Dept. of Labor, Job Order #GA 6298481, 1535 Atkinson Rd., Lawrenceville, GA 30243-5601 or the nearest Department of Labor Field Service Office.

Programmer Analyst needed for computer software development and consulting firm located in Duluth, Georgia. Job duties include: software consulting on various in-house projects and/or contract basis. Design, develop and re-engineer a variety of computer applications using state-of-the-art tools and techniques. Use COBOL II, MVS/JCL, DB2, IMS database, VSAM database, VS/CICS, INTERTEST, XPEDITOR, Job Scheduler and FILE-AID on IBM mainframe in MVS/XA/ESA environment. Applicant must have a B.S. in Computer Science, Applied Science, Engineering or Math and 2 yrs. exp. in job duties described above or 2 yrs. exp. as a Programmer Analyst or Systems Analyst to include 2 yrs. designing and developing computer applications with COBOL II, MVS/JCL and DB2. 40hrs/wk, 8am-5pm, \$52,997/yr. Send 2 resumes to Georgia Dept. of Labor, Job Order #GA 6297000 at 1535 Atkinson Rd., Lawrenceville, GA 30243-5601 or the nearest Department of Labor Field Service Office.

Systems Analyst: Durham (NC); Analyze, design, develop and implement software applications for inventory, financial accounting, accounts receivables, accounts payables, human resources, manufacturing and distributions using RDBMS Oracle SQL*Forms, ReportWriter, SQL*Menu, SQL, PL*SQL and Pro*C user exists with Oracle Call Interface; Apply structured system analysis techniques to analyze business requirements; develop and maintain entity relationship diagram; Perform Data Modeling, Formulate Data Structures; Optimize database schema designs by applying Normalization techniques; Optimize application performance using table design with restrictive constraints, referential integrity, resolve disk and database fragmentation by table splitting and stripping, resolve rollback segment contention; and using shared SQL areas, explain plan and analyze commands and embedding execution hints; Implement Oracle financial applications by customizing legacy data conversions and interfaces for accounts receivables, accounts payable and inventory systems. Requires BS Eng. in electrical/computer or electronics and 2 years exp. in RDBMS Oracle SQL*Forms, SQL, ReportWriter, SQL*Menu, PL*SQL and Pro*C user exists in the position offered or in a related occupation of software engineer or software specialist or programmer analyst. Salary \$80,000 yr., Mon through Fri 8:00am-5:00pm/40 hrs. week; Please send resume with applicant's social security number and job order number #NC3005605 and DOT code 030.167-014 to: Job Service, 1105 Briggs Avenue, Durham, NC 27703 or apply to the nearest job service office.

Senior Software Engineer - Responsible for system analysis, design, development, and evaluation of existing client information systems through gathering of user requirements and translation of those requirements to the process and data models of the proposed solutions. Assist in the selection of software and hardware as well as capacity planning. Advise on project issues as well as communicate progress to client management. Requirements include a Master's Degree or equivalent with specialization in Computer Science, Information Systems or related field plus two years experience in systems analysis, design, and implementation of large enterprise wide IT solutions including relational database design and modeling (normalization techniques) using ORACLE and DB2. Strong background in Structured Methodologies; Computer Aided Software Engineering (CASE) tools; and software development tools. Applicant must have unrestricted authorization to work in the United States. Salary \$67,000/year. 40 hours/wk. Respond with two copies of resume to Case #80369, PO Box 8968, Boston, MA 02114.

Programmer Analyst to design, develop, test, and document computer software to support the computer environment control systems for tracking systems for automated material handling systems. Design graphic user interface (GUI) in MS-DOS, MicroSoft Windows. Develop Window applications using Visual Basic, Visual C++, Oracle, FoxPro and MS Access languages. Use Application Programming Interface (API), Network Dynamic Data Exchange (NetDDE), Dynamic Link Library (DLL), Object Linking Embedded (OLE2.0), and Object Control Box (OCB). Develop above on personal computers. Requirements: M.S. in Computer Science, Experience: 6 month in the job offered. 40 hrs/wk; 8:00 a.m. to 5:00 p.m.; \$42,702/yr. Send resumes (in duplicate) no calls, to Ginny Burton, JO# 3698787, Department for Employment Services, 275 E. Main Street, 2-W, Frankfort, Kentucky 40621. Equal Opportunity Employer. Those who are not authorized to work permanently in the United States need not apply.

SOFTWARE ENGINEER 40 Hrs per Wk., 8:00AM - 5:00PM, M-F, \$65,000.00/Yr., M.S. Computer Science/Related Field. Job is in Orlando, Florida. 3 Years Experience in Job Offered or 3 Yrs. related occupation/Programmer/Analyst; Software Engineer; Systems Analyst. At least one year of experience must be in a lead role utilizing Tools described below; Alternately Employer will also accept B.S. in Computer Science with 5 Years Progressive Experience as follows: 1) 2 Yrs. exp. in software Engineering/System Analysis and/or Programming using above tools; 2) 1 Yr. exp. in a lead role in Research, Design and Development of large, complex industrial scientific and Business Applications with tools described below; 3) 1 Yr. exp. in migrating large volume application systems on Multi-Hardware and Software environments and 4) 1 Yr. exp. in developing and directing software testing procedures. Perform a lead role in the Research, Design and Development of Industrial, Business, Scientific software applications including on-site user interaction, identification, analysis, design, development and implementation of large volume on line and data application systems using Java, JDK 1.1, C++, C, Microtec, C++ Cross compiler, Orbix, IBM's MQ series, Objecttime Room, Paradigm Plus Rumbaugh OMT tool, NEC-PC-TCP/IP, MS Winsock, Pharlap's DOS Extender, Neuron data, Motif and MS library in Solaris 2.5, HP-UX 9, AIX 3.2, and Windows; develop and direct software testing procedures; migrate large volume application systems on multi-hardware and multi software environments using common migration & data conversion tools; Recommend & present Business Re-Engineering proposals to corporate clients. Send resume to Department of Labor/ Bureau of Workforce Program Support, P.O. Box 10869, Tallahassee, FL 32302 JOFL 1861614.

Project Leader (Oakbrook, IL). Lead team in analyzing/designing/develop, data processing & inform. manag. system, applications & databases. (Use Oracle, AIX, Unix). Establish system parameters. Design & develop graphical user interfaces. (Use Oracle, SQL Server, C++, DOS NOVELL). Design comp. architecture & file structures (Use Oracle, AIX). Prepare project plans/requirements/schedules/work assignments & resources. Supervise staff perform & provide tech. guidance. Consult w/management & client re: progress/obstacles/changes. Lead training seminars & demonstrate software in client/server environment. Req'd: Master's in Manag/Comp. Sci/Eng/Bus. Admin. & 4 yrs exp. Exp. must incl: Oracle, SQL Server, Unix, C++, DOS NOVELL, AIX. 40hrs/wk, 9-5, \$64,084.80/yr. Must have proof of legal authority to work permanently in the US. Send resumes to: Illinois Department of Employment Security, 401 South State St-7 North, Chicago, IL 60605. Att: Arlene Throver. Ref# V-IL 19595-T An employer paid ad. No CALLS-send 2 copies of both resume & cover letter.

SYSTEMS ANALYST to analyze, design, develop, implement and test software systems at customer locations for various applications in a distributed client/server environment using object oriented programming techniques, GUI tools, OLE/COM, Visual C++ (MFC), Visual Basic, MS Access, Windows SDK under Windows NT/95 operating systems. Require: B.S. degree in Computer Science/Engineering with two years of experience in the job offered; Extensive travel to various client sites within the U.S. Salary: \$60,000 per year, 8 am to 5 pm, M-F. Apply by resume to: Georgia Department of Labor, Job Order # GA 6298443, 2943 N. Druid Hills Rd., Atlanta, GA 30329 or the nearest Department of Labor Field Service Office.

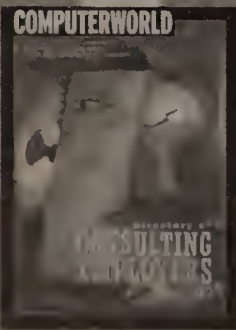
IT CAREERS EAST

Systems Analyst/Programmer. Duties: Perform COBOL programming for a Year 2000 conversion project. Encode legacy systems in COBOL and test converted applications. Responsible for the installation of operating programs and procedures for computer operations and other departments. Perform extensive application programming support with COBOL for conversion project. Prepare detailed plans to implement computer conversion for data compliance. Perform system maintenance including troubleshooting, problem solving and system support functions. Requires: M.S. in Comp. or Info. Sci., Eng. or related field. Must have coursework in COBOL programming. EOE 40 hrs./wk.; 8:00am to 5:00pm. Salary: \$40,000/yr. Send resume (no calls) to: Steve Kline, CTG, Inc., 1715 North West Shore Blvd., Suite 400, Tampa, FL 33607-3926.

Programmer Analyst, Roswell, GA: Develop and maintain software on Mainframe Systems using SCL, JCL, DB2, CICS, COBOL, VB scripting and Excel. Ability to download data from mainframe to PC/LANs. Req'd MS in Statistics or Math or Computer Science or engineering with more than one year Experience or one year experience in related field. Please send resumes with JOB CODE: MAIN002 to Advanced Networks, #1111 Alderman Drive, Suite #205, Alpharetta, GA 30005.

Multiple openings for software engineers in Parsippany, NJ. Must have exp. in various technologies including Unix, C & C++. Apply to Global Consultant, Inc. 601 Jefferson Rd, Parsippany, NJ 07054.

**Find I.T.
Consulting
Careers
Here**



computerworldcareers.com

When was the last time a great job found you?

That's what we thought.

You already know *Computerworld* as a great resource for career opportunities. Now we're bringing you **Computerworld Career Central**, the service where *the jobs find you*.

If you're a software development professional, visit www.computerworldcareers.com, fill out a Member Profile and submit it. We'll find jobs matched to your skills, experience and preferences and send them to you, *confidentially*, via e-mail. *Computerworld Career Central* is the hassle-free, cost-free, we-do-the-work-so-you-don't-have-to job matching service that *works*.

You work hard enough. Go to www.computerworldcareers.com and let *us* do the rest.

COMPUTERWORLD
 **Career Central™**
www.computerworldcareers.com

FIND
I.T. Consulting
Careers
HERE

COMPUTERWORLD

ENTER ADDRESSES TO...
UNIVERSITY AND BUSINESS MARKETS
THE BEST IDEAS AND TRENDS FOR THE FUTURE



computerworldcareers.com



Don't Miss This Event if You Are

- A member of an application development team
- Responsible for any aspect of the application development lifecycle
- Interested in exploring...
 - application integration
 - architecture issues
 - app/dev management strategies
 - middleware issues
 - transaction processing
 - component and reuse strategies
 - modern data management technologies
 - development tools

December 1-3, 1998
The Fairmont Hotel
San Jose, CA

EARLY BIRD
REGISTRATION
SAVE \$100!
Register by
Nov. 13, 1998

The only forum focused on exploring trends, tools and solutions for managing the corporate enterprise application development lifecycle.

The ADT Conference & Expo will offer visionary keynote speakers, skill building workshops, in-depth case studies and analysis of successful application development projects, and hands-on workshops utilizing the latest tools and technologies. You will learn how to:

- Exploit Internet/intranet technology
- Develop applications faster
- Recruit and retain IT staff
- Keep up with the excessive rate of change in technology standards
- Improve quality of IT services and products
- Overcome developer inexperience with new tools
- Integrate new technologies with existing systems
- Cope with the complexity of the development process


To become a sponsoring exhibitor, call Ken Bacon (508) 652-1237 or email: kbacon@ullo.com

Produced by:

ULLO INTERNATIONAL, INC.
An Integrated Marketing/Communications Organization

Sponsored by:

Application Development Trends SPG Analyst Services

 **Register Online Today!** www.adtmag.com/confor call (508) 652-1010

COMPUTERWORLD
c@reers

COMPUTERWORLD
c@reers
computerworldcareers.com

computerworldcareers.com

COMPUTERWORLD
c@reers

Find I.T.
Consulting
Careers
Here

COMPUTERWORLD



computerworldcareers.com

For information on
advertising,
call 800-343-6474

Marketplace

ATTENTION!



Attention!™ will page you,
or call you on the phone
when critical system
or network
problems occur.

- ✓ Supports UNIX, Windows NT, Windows 95, and Open VMS
- ✓ Notification via numeric and alpha pagers, telephones, and custom methods
- ✓ Interfaces with all leading system/network management products
- ✓ Unlimited escalation guarantees the right people are contacted
- ✓ Personnel call in to **Attention!** to acknowledge receipt of page
- ✓ Fault tolerant design supports redundant **Attention!** servers for immediate failover
- ✓ Event filtering suppresses redundant notification for same problem
- ✓ Heartbeat monitoring guarantees systems and critical applications are running 24x7

www.attentionsoftware.com

ATTENTION
Software

2175 N. Academy Circle • Suite 100 • Colorado Springs, CO 80909
(719) 591-9110 • fax (719) 591-9590

Call for free demo software 800-684-1684

Try Our Proven I.T. Certification Training...

Discover the fastest and easiest way to prepare for I.T. certification. Our Self-Study computer-based training courses provide a learning environment that surpasses traditional classroom and video courses. To prove it, we're offering a free demo disk of our CBT courses to I.T. professionals who call today!

- MCSE
- MCSE+Internet
- MCP
- Cisco
- Intro to Network
- A+ Certification
- MCSD
- Visual C++
- C++
- Oracle
- And More!
- CNE
- Novell CIP
- CNA
- UNIX
- Web Master
- Intro to PC
- Visual Basic
- Java
- COBOL
- Office 97

- Gain Valuable Skills, Knowledge and Technical Recognition
- Open the Door to Great Career Opportunities
- Raise Your Income
- Study at Your Own Pace
- Interactive Hands-on Exercises
- Receive One-on-One Training Consulting

**I.T. Professionals Call Now to
Get Your FREE Demo Disk!**

1-800-475-5831

FOREFRONT
DIRECT
A CBT Group Company

25400 US Hwy. 19 N., #285 • Clearwater, FL 33763

Copyright © 1998 CBT Group, PLC. All rights reserved. ForeFront Direct, the ForeFront Direct logo and ForeFront Direct Self-Study Course are trademarks of CBT Group, PLC. All other trademarks are the properties of their respective holders. Printed in the U.S.A. MCW

**We guarantee
you'll get Microsoft® certification**

But you've got to get by Spike and his gang first.

We can't promise to make the Microsoft® Certification process any easier, at least not our part of it. In fact, we promise to make it really hard. See, we make simulations of Microsoft certification exams, and if you pass our exam on the first try – you should be able to pass the real thing. If you use Transcender and then fail the Microsoft exam twice, we'll give you your money back.* How can we do this?...Because nobody else has Spike and his top-notch team of exam development professionals. Call Spike at (615) 726-8779 or visit our Web site for more details.

Transcender delivers:

- Realistic MCSE + MCSD Questions
- Detailed Answers
- Citations to Microsoft References
- Predictive Score Reports
- Focus your Study
- Pass the Real Exam
- From \$129-\$179
- Money Back If You Don't Pass Guarantee*

To order call Spike @ (615) 726-8779
or fax (615) 726-8884

www.transcender.com

242 Louise Ave. Nashville, TN 37203

*Call or visit our
Web site for details.



Transcender
Corporation

**Microsoft Certified
Solution Provider**

© 1998 Transcender Corp. All Rights Reserved
Microsoft is a registered trademark of Microsoft Corporation

PCs THAT SHORTEN YOUR WORK DAY. AND STRETCH YOUR BUDGET.



**Our selection of refurbished systems changes daily,
and quantities are limited.**

CALL NOW TO ORDER.

DELL® OPTIPLEX® GX1 350 DESKTOP PENTIUM® II PROCESSOR AT 350MHz

64MB Memory • 4.3GB Hard Drive • 32X Max¹ Variable CD-ROM
• 16-bit Sound • 4MB AGP Video • 56Kbps Modem²
• 10/100Mbps Ethernet

\$1373 Monitor Sold Separately

DELL LATITUDE® CP M233XT NOTEBOOK PENTIUM PROCESSOR WITH MMX™ TECHNOLOGY AT 233MHz

32MB Memory • 3.2GB Hard Drive • 20X Max¹ Variable CD-ROM
• 16-bit Sound • 13.3" XGA Active Matrix Display • Lithium Ion
Battery • 56Kbps Modem²

\$1986

DELL POWEREDGE® 2300 WORKGROUP SERVER PENTIUM II PROCESSOR AT 400MHz (DUAL PROCESSOR CAPABLE)

128MB Memory • 9GB SCSI Hard Drive • 32X Max¹ Variable SCSI
CD-ROM • 10/100Mbps Ethernet • 12/24GB SCSI Tape Drive

\$2552

UPGRADE: Dual Pentium II Processors at 400MHz for \$600.

DELL OPTIPLEX GX1 400 DESKTOP PENTIUM II PROCESSOR AT 400MHz

64MB Memory • 6.4GB Hard Drive • 32X Max¹ Variable CD-ROM
• 16-bit Sound • 4MB AGP Video • 56Kbps Modem²
• 10/100Mbps Ethernet

\$1557 Monitor Sold Separately

DELL LATITUDE CPi D266XT NOTEBOOK PENTIUM II PROCESSOR AT 266MHz

64MB Memory • 4GB Hard Drive • 20X Max¹ Variable CD-ROM
• 16-bit Sound • 13.3" XGA Active Matrix Display • Lithium Ion
Battery • 56Kbps Modem²

\$2444

DELL POWEREDGE 4200 DEPARTMENTAL SERVER* PENTIUM II PROCESSOR AT 266MHz (DUAL PROCESSOR CAPABLE)

256MB Memory • (3) 4GB SCSI Hard Drives • 24X Max¹ Variable
SCSI CD-ROM • 10/100Mbps Ethernet • 12/24GB SCSI Tape Drive
• RAID Controller with 16MB Memory

\$5111

*This device is subject to verification to the FCC Class A radio frequency standards. It is not, and may not be, offered for sale or lease for use in a residential environment.

Welcome to Dell Refurbished, where you can buy current computer technology for less. We offer quality refurbished Dell desktops, notebooks, workstations and servers.

REFURBISHED SYSTEMS INCLUDE:

- Original Dell quality specifications
- Three-year same-as-new limited warranty†
- Free 24-hours-a-day, seven-days-a-week technical hardware support
- Microsoft® Windows® 95 and Home Essentials 98 (desktops and notebooks)
- Microsoft Windows NT® 4.0 (workstations)

ACCESSORIES (with system purchase):

APC SurgeStation Pro 8T2 Surge Suppressor	\$39
APC Back-UPS Pro 650 Power Supply	\$289
Nylon Notebook Carrying Case.....	\$49
Dell Latitude Secondary Lithium Ion Battery.....	\$99
3Com® 10/100Mbps CardBus Ethernet Card.....	\$169
Dell Latitude C/Port Advanced Port Replicator with Monitor Stand.....	\$349
Iomega 100MB External Zip Drive	\$125
Hewlett Packard DeskJet® 722C Inkjet Printer	\$299
Dell 1000HS 17" (15.9" viewable) Monitor.....	\$399

**CALL NOW. SUPPLIES LIMITED.
1-888-452-3117**

- Mon-Fri 7am-9pm CDT
- Sat & Sun 10am-6pm CDT

Keycode 31132



All systems refurbished. Available configurations may vary. †For a copy of limited warranties, write to Dell Refurbished, 1 Dell Way - Box 65, Round Rock, TX 78682, Attn.: Warranties. All sales FOB Austin. Supplies limited to stock on hand. No rain checks. Prices and specifications subject to change without notice and valid in the U.S.A. only. ¹32X Max/14X Min. ²24X Max/12X Min. ³20X Max/9X Min. ⁴Download speeds limited to 53Kbps. Upload speeds are less (in the 30Kbps range) and vary by modem manufacturer. Speeds also vary depending on line conditions. Analog phone line and compatible server equipment required. The Intel Inside logo and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. DeskJet is a registered trademark of Hewlett Packard Corporation. 3Com is a registered trademark of 3Com Corporation. Microsoft, Windows and Windows NT are registered trademarks of Microsoft Corporation. Dell disclaims proprietary interest in the marks and names of others. Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. ©1998 Dell Computer Corporation. All rights reserved. Printed in the U.S.A. Reproduction in any manner whatsoever without the written permission of Dell Computer Corporation is strictly forbidden. Dell cannot be responsible for errors in typography or photography.

DELL®
REFURBISHED
www.dell.com/outlet

For information on
advertising,
call 800-343-6474

Marketplace

storage.com

RAID DEALER PRICE BUSTER

Cluster-Ready
Dual Ultra SCSI
RAID for UNIX
and NT servers

Concurrent
multi-host
connectivity

- ✓ Pentium Inside
- ✓ OEM Quality Disks
- ✓ Installation and 1-Year 7x24
Call-Home Service

AT RECORD-SETTING
DEALER PRICES...

Model	Protected GB*	Rent /week**	Buy
RTS-64	64	\$169	\$ CALL
RTS-127	127	\$219	\$ CALL
RTS-235	235	\$279	13½¢/MB
RTS-420	420	\$389	\$ SAVE
RTS-650	650	\$539	10¢/MB
RTS-890	890	\$629	\$ 89,990
RTS1080	TB+	\$899	9½¢/MB

*Usable capacity varies by server OS and user options

** 36 month lease

Call toll-free
877.777.0609
or order @
www.storage.com

BUY ♦ SELL ♦ LEASE ♦ RENT

NEW & REFURBISHED Compaq™/DEC™ EQUIPMENT Systems * Peripherals * Compatibles

- ♦ Competitive Pricing
- ♦ Custom Systems Integration
- ♦ Experienced Staff
- ♦ In-House Tech Support

DECUS

COMPUREX
SYSTEMS



GSA #GS-35F5107H

Easton, Massachusetts

Toll Free: 800.426.5499 Tel.: 508.230.3700 Fax: 508.238.8250

e-mail: sales@compurex.com

DECUS and DEC™ are registered trademarks of Digital Equipment Corporation.
COMPAQ is a registered trademark of Compaq Computer Corporation.

Compurex Systems is not affiliated with Digital Equipment Corporation or Compaq Computer Corporation.

BUY ♦ SELL ♦ LEASE ♦ RENT



Year 2000 Solution Center

Why Risk the Integrity of Your Production Systems for Y2K Testing?

We have Test Time available on:

IBM Mainframe; IBM AS/400; DEC Alpha; RISC 6000

We can provide:

- Operating System Software with post January 1, 2000 environment
- Technical and Operational Support
- Console Support — Local or Remote
- High Speed Telecommunications Links
- On site user Workstations
- Over 50 years of combined experience in providing Information Technology Solutions

201-840-4900

Alicomp

800-274-5556

DDA AND COMPUTERWORLD MARKETPLACE Partners for Success

COMPUTERWORLD

Association of the
dda
DEC Marketplace

Resellers!

Join the DDA

Computerworld Discounts
On-Line Trading Network
Networking Opportunities
Educational Programs

Call today for a membership application.



End-users!

Protect Your DEC
Investment

We are the experts-with
16 years as the DEC association
working with you.

Call today for a membership list.

800-332-1130 734-475-8333 www.dda.org

SALES OFFICES

COMPUTERWORLD HEADQUARTERS: 500 Old Connecticut Path, PO Box 9171, Framingham, MA 01701-9171

Phone: (508) 879-0700, Fax: (508) 875-4394

Publisher
Jim MartinVice President/Enterprise Publishing Group
Elaine R. OffenbachRegional Vice President
Southwest
Ron HallRegional Vice President East
Sherry DriscollRegional Vice President
Northwest
Linda Holbrook

EAST

Director: Isabelle Kane; Senior District Manager: Laurie Marinone; Sales Operations Manager: Leslie Murray; Sr. Account Executive: Nathaniel Hampson; Sales Associates: Cheryl Giangregorio, Samantha Hadley, 500 Old Connecticut Path, Framingham, MA 01701 (508) 879-0700 Fax: (508) 270-3882 TDD: (800) 428-8244

Director: Lisa Ladle-Wallace, 5242 River Park Villas Drive, St. Augustine, FL 32092, (800) 779-5622 Fax: (800) 779-8622

Director: Fred LoSapio; District Manager: John Bosso; Account Executive: Maureen Grady; Sales & Office Associate: Susan Kusnic; Senior Sales Associate: Jean Dellarobba; Sales Associate: John Radzinski, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 Fax: (201) 587-9255, (201) 587-1289 TDD: (800) 208-0288

NORTHWEST

District Managers: Angela Flores, Denyce Kehoe; Account Executives: Kevin Ebmeyer, Monica Kormoczy, Marc Wilkie; Sales Associates: Bonni-Jo Bouchard, Amy Hudson; Sales Operations Manager: Emmie Hung; Office Services Manager: Jessica Abude; Office Services Assist.: Chris Flanagan; Receptionist: Yvonne Zuniga, 177 Bovet Road, Suite 400, San Mateo, CA 94402 (650) 357-0200 Fax: (650) 524-7000 TDD: (800) 900-3179 Director: Sharon Chin; Senior Sales Associate: Jill Colley, 10900 N.E. 8th Street, Suite 820, Bellevue, WA 98004 (425) 451-0211 Fax: (425) 451-3822

Senior District Manager: Blayne Long; Sales Associate: Jasmine Huffman, 875 N. Michigan Avenue, Suite 2846, Chicago, IL 60611 (312) 943-4266 Fax: (312) 943-2214

SOUTHWEST

Director: Ernie Chamberlain; District Manager: Tom Vorisek; Senior Account Executives: Claude Garbarino, Julie Compton; Sales Associates: Stefan Mayo, Brian Shindeldecker; Sales Operations Coordinator: Madeleine Poquiz; Office Services: Jessica Abude; Sales Coordinator: Yvonne Zuniga, 177 Bovet Road, Suite 400, San Mateo, CA 94402 (650) 357-0200 Fax: (650) 524-7001 TDD: (800) 900-3179

Senior District Manager: Jennifer Hedges; Senior Sales Associate: Brenda Shipman, 14651 Dallas Parkway, Suite 118, Dallas, TX 75240 (972) 233-0882 Fax: (972) 701-9008 TDD: (800) 822-4918

Senior District Manager: Cindy Wager; Account Executive: Robert Pietsch, 2171 Campus Drive, Suite 100, Irvine, CA 92612 (949) 250-3942 Fax: (949) 476-8724

ADVERTISING OPERATIONS PRINT & ON-LINE

Senior Display Advertising Coordinator: Gregg Pinsky; Display Advertising Coordinator: Peter Coen, (508) 879-0700 Fax: (508) 879-0446

ENTERPRISE PUBLISHING GROUP

Boston: Director of Operations/Carolyn Medeiros; Project Coordinator/Heidi Bradley; Managing Editor/Peter Bochner, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 Fax: (508) 875-6310

San Francisco: Director/Michele Gerus; Senior Sales Operations Coordinator/Nikki Wilson, 177 Bovet Road, Ste. 400, San Mateo, CA 94402 (650) 357-0200 Fax: (650) 524-7000

East: Director/Peter Oxner, 875 N. Michigan Ave., Ste. 2846, Chicago, IL 60611. (312) 397-6360 Fax: (312) 943-2214

MARKETPLACE/DIRECT RESPONSE CARDS

Sales Manager/Laurie Gomes, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 820-8249 Fax: (508) 875-3701

East: Account Director/Norma Tamburrino, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-8278 Fax: 201-712-0430

Midwest: Account Director/Linda Clinton, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 820-8288 Fax: (508) 875-3701

California, Alaska, Hawaii: Account Executive/Jason Bishop, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 271-8009 Fax: (508) 875-3701

West: Account Executive/Maureen Roberti, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 271-8007 Fax: (508) 875-3701

RECRUITMENT ADVERTISING SALES OFFICES

Marketing Director/Derek E. Hulitzky; Operations Director/Cynthia Delany, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

New England & Upstate New York: Regional Manager/Nancy Percival, 500 Old Connecticut Path, Framingham, MA 01701 (800) 343-6474, Senior Account Executive/Nancy Mack, (800) 343-6474

Mid-Atlantic: Regional Manager/Jay Savell, 4100 Ferncroft Lane, Bethlehem, PA 18020-7617 (610) 867-5288, Senior Account Executive/Caryn Dlott, (800) 343-6474 TDD: (800) 208-0288

South Atlantic: Regional Manager/Katie Kress-Taplett, 8304 Professional Hill Drive, Fairfax, VA 22031 (703) 280-5162, Product Manager/Pauline Smith (800) 343-6474

Midwest: Regional Manager/Pat Powers, 1011 East Touhy Avenue, Suite 550, Des Plaines, IL 60018 (847) 827-4433, Account Executives/Nicholas Burke, Susan Hammond, (800) 343-6474 TDD: (800) 227-9437

West: Regional Manager/Christopher Glenn, 177 Bovet Road, Suite 400, San Mateo CA 94402 (415) 665-2443, Account Executives/Kate Angelone, Chris Connery, (800) 343-6474

MARKETING: Marketing Director/Chris McGarry, Art Director/Gary Suen, Copywriter/Steve Stamates CIRCULATION: Vice President Circulation/Maureen Burke PRODUCTION: Production Director/Christopher P. Cuoco, Production Manager/Beverly Wolff DISTRIBUTION: Distribution Manager/Bob Wescott RESEARCH: IT Market Analyst/David Daoud, Research Analyst/Matt Duffy, Research Analyst/Candace O'Keefe, Associate Research Analyst/Jim Karalekas

COMPUTERWORLD

President/CEO
Jim MartinVice President/Marketing
Cynthia L. Ahart
(508) 820-8272Vice President/
Information Systems
Richard Broughton
(508) 620-7700Vice President/
Recruitment Advertising
John Corrigan
(508) 820-8273Vice President/Editor
Paul Gillin
(508) 620-7724Vice President/
Information Management Group
Scott R. Kleinman
(650) 524-7060Vice President/General Manager
New Media & Information Mgmt.
Richard Mikita
(508) 628-4766Vice President/Human Resources
Susan C. Perry
(508) 820-8160Senior Vice President/Finance
Matthew C. Smith
(508) 820-8102

INTERNATIONAL DATA GROUP

Chairman of the Board, Patrick J. McGovern

President, Kelly Conlin

Chief Operating Officer, Jim Casella



Computerworld is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 285 computer newspapers and magazines and 500 book titles in 75 countries. Sixty million people read one or more International Data Group publications each month.

ADVERTISERS INDEX

ACUCORP 68

<http://www.acucorp.com>

Cabletron 9

<http://www.cabletron.com>

Cap Gemini 64

<http://www.capgemini.com>

Cisco 41

<http://www.cisco.com>

Compaq Computer

Corp. 36-37, 44-45, 80-81

<http://www.compaq.com>

Computer Associates . . 22-23, 58-59

<http://www.cai.com>

Computer Channel 60

<http://www.compchannel.com>

Corel. C4

<http://www.corel.com>

Dell. 30-31

<http://www.dell.com>

Dow Jones 65

<http://ip.dowjones.com>

EARTHWEB 21

<http://www.earthweb.com>

Gateway 2000 66-67

<http://www.gateway.com>

Hewlett-Packard 18-19, 62

<http://www.hp.com>

IBM 53-56

<http://www.ibm.com>

Information Builders 11

<http://www.ibi.com>

InterSystems Corp 38

<http://www.intersys.com>

JD Edwards 20

<http://www.jdedwards.com>

Lotus Development Corp. . . . 13, 15

<http://www.lotus.com>

(800) 343-5414

Microsoft 25, 27, 29

<http://www.microsoft.com>

Network Associates C3

<http://www.nai.com>

New Horizons 70

<http://www.newhorizons.com>

Nortel Networks. 34

<http://www.nortelnetworks.com>

Oracle Corp. C2

<http://www.oracle.com>

Pacific Bell 72-73*

<http://www.pacificbell.com>

Platinum Technology . . . 17, 48-49

<http://www.platinum.com>

Prolifics. 10

<http://www.prolifics.com>

SAS Institute 7, 50

<http://www.sas.com>

Southwestern Bell 72-73*

<http://www.swbell.com>

StorageTek 47

<http://www.storagetek.com>

Syncsort 5

<http://www.syncsort.com>

Unisys. 42

<http://www.unisys.com>

(800) 874-8647 X100

*Regional Select Edition

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

HAVE A PROBLEM WITH YOUR COMPUTERWORLD SUBSCRIPTION?

We want to solve it to your complete satisfaction, and we want to do it fast. Please write to:

Computerworld, P.O. Box 2043, Marion, Ohio 43305-2043.

Your magazine subscription label is a valuable source of information for you and us. You can help us by attaching your magazine label here, or copy your name, address, and coded line as it appears on your label. Send this along with your correspondence.

Address Changes or Other Changes to Your Subscription

All address changes, title changes, etc. should be accompanied by your address label, if possible, or by a copy of the information which appears on the label, including the coded line.

Your New Address Goes Here Address shown: ☐ Home ☐ Business

Name

Company

Address

City

State

Zip

Other Questions and Problems

It is better to write us concerning your problem and include the magazine label. Also, address changes are handled more efficiently by mail. However, should you need to reach us quickly the following toll-free number is available: 1-800-552-4431 Outside U.S. call (740) 382-3322. Internet address: circulation@cw.com

COMPUTERWORLD allows advertisers and other companies to use its mailing list for selected offers we feel would be of interest to you. We screen these offers carefully. If you do not want to remain on the promotion list please write to the following address - COMPUTERWORLD, Circulation Department, 500 Old Connecticut Path, Framingham, MA 01701.

Name	Title	Address	City	State	Zip
Company					

The Week in Stocks

Gainers



Losers



PERCENT

Data General	46.3	Renaissance Worldwide (L)	-16.1
CBT Group Plc.	36.8	Call-Net Enterprises	-13.9
Parametric Technology Corp.	34.7	Checkfree	-11.4
Platinum Technology Inc.	33.7	Sony	-10.9
Manugistics Group Inc.	32.9	Canon Inc.	-10.8
Aspen Technology Inc.	28.2	Tech Data	-10.4
Avd Technology	26.3	Computer Sciences	-9.5
Advanced Micro Devices	26.0	Uniphase	-8.5

DOLLAR

America Online	9.75	Sony	-8.06
Northern Telecom. Ltd.	8.69	Computer Sciences	-5.44
Amazon.Com	8.00	Tech Data	-4.69
Sgs-Thomson Microelectronics	7.50	Uniphase	-4.56
Shared Medical Systems	7.31	Viacom	-2.50
Citrix Systems Inc.	7.25	Canon Inc.	-2.38
Veritas Software Corp.	7.25	Legato Systems Inc.	-2.38
Hnc Software	6.97	Cox Communications Inc.	-2.38

INDUSTRY ALMANAC

Personals for IT investors

Guy Kawasaki wants to be the Internet's business matchmaker. Formerly an evangelist for Apple Computer Inc., Kawasaki is now CEO and chairman of Garage.com (www.garage.com), a month-old Palo Alto, Calif.-based company that helps information technology entrepreneurs hook up with investors willing to back a small start-up with an interesting business plan.

"We hope we can put [business] plans in front of qualified investors quickly," Kawasaki says. "It's all about getting them money quickly so that they can do the real business of building a product or a company."

Here's how privately held Garage.com works:

Entrepreneurs submit a short business plan to the Garage.com staff, and it's scrutinized for its soundness and for the background and history of the people involved. If the plan passes that test, Kawasaki and his board of advisers request a more detailed business plan. Pass that phase (which only eight out of more than 1,900 submissions have so far), and the plan is posted in a secure area of the Garage.com Web site, where potential investors can view it.

The investors must have a liquid net worth of at least \$1 million, private equity investment experience and an IT connection. "The rich guy from Iowa who owns 10 dry-cleaning stores is not the investor we're looking for," Kawasaki

says. For the privilege of looking over those business plans, investors pay an annual fee of \$10,000.

If the two sides hit it off and decide to do business, Garage.com gets a cut: a 3% to 5% equity stake in the newly backed venture, as well as a matchmaker's fee of 5% of the total investment.

Although Garage.com already has set up a sponsor with one company — Santa Cruz, Calif.-based RealityFusion Inc. — Kawasaki's business model doesn't impress at least one venture capitalist.

Robert J. Crowley, an executive vice president at Massachusetts Technology Development Corp., a Boston-based investment outfit, says it sounds like a good concept, but with a steep price tag. "I know plenty of individual investors — no way they'd pay 10,000 bucks for that," Crowley says. And companies willing to surrender a 5% stake for an introduction "have to be pretty desperate," he added.

Kawasaki shrugs off the criticism. "We're very busy — I read 25 business plans a day," he says. "We're trying to find the next Apple, the next Yahoo — that's what we're doing this for." — Stewart Deck



Guy Kawasaki

EXCH 52-WEEK RANGE OCT. 30 WK NET WK PCT 2 PM CHANGE CHANGE

Software

UP 10.4%

ADBE	51.87	23.62	ADOBE SYSTEMS INC.	38.50	2.50	6.9
AZPN	56.87	6.12	ASPEN TECHNOLOGY INC.	13.63	3.00	28.2
ADSK	50.06	21.62	AUTODESK INC.	31.00	5.19	20.1
AVID	47.75	11.06	AVID TECHNOLOGY	25.50	5.31	26.3
BOOL	27.87	16.00	BOOLE & BABBAGE INC. (H)	27.56	2.56	10.3
CDN	39.00	19.12	CADENCE DESIGN SYSTEMS	20.38	-0.63	-3.0
CBTSY	63.87	6.68	CBT GROUP PLC	11.63	3.13	36.8
CHKPF	50.50	10.87	CHECKPOINT SOFTWARE	23.00	0.50	2.2
CTXS	76.75	36.37	CITRIX SYSTEMS INC.	70.88	7.25	11.4
COGNF	30.50	14.75	COGNOS INC.	20.38	1.38	7.2
CA	61.93	26.00	COMPUTER ASSOCIATES	39.56	0.81	2.1
CPWR	63.00	27.62	COMPUWARE CORP.	54.25	1.88	3.6
DCTM	59.62	16.75	DOCUMENTUM	35.66	0.91	2.6
EFII	52.00	12.87	ELECTRONICS FOR IMAGING	24.69	2.25	10.0
HNCSS	47.12	22.50	HNC SOFTWARE	34.31	6.97	25.5
IDXC	55.75	28.37	IDX SYSTEMS	42.13	1.13	2.7
IFMX	10.43	3.50	INFORMIX SOFTWARE INC.	5.06	-0.06	-1.2
INTU	67.93	26.25	INTUIT	50.00	2.00	4.2
JKHY	50.25	23.37	JACK HENRY ASSO	46.13	3.06	7.1
LGTO	56.18	16.00	LEGATO SYSTEMS INC.	38.44	-2.38	-5.8
MACR	20.56	7.12	MACROMEDIA INC.	20.56	3.50	20.5
MANU	66.37	6.12	MANUGISTICS GROUP INC.	14.38	3.56	32.9
MENT	11.81	5.43	MENTOR GRAPHICS	8.28	0.59	7.7
MSFT	119.62	59.00	MICROSOFT CORP.	106.25	-1.81	-1.7
NETA	56.87	25.50	NETWORK ASSOCIATES	42.88	3.88	9.9
GMH	57.87	30.37	NETWORK GENERAL	38.75	0.81	2.1
NOVL	15.00	6.81	NOVELL INC. (H)	15.00	1.19	8.6
ORCL	37.25	17.75	ORACLE CORP.	29.38	2.69	10.1
PMTC	36.31	8.50	PARAMETRIC TECHNOLOGY CORP.	17.00	4.38	34.7
PSFT	57.43	18.37	PEOPLESOFT INC.	21.06	1.63	8.4
PIXR	66.00	19.50	PIXAR	47.13	3.13	7.1
PLAT	34.31	9.00	PLATINUM TECHNOLOGY INC.	16.88	4.25	33.7
RATL	22.13	8.12	RATIONAL SOFTWARE CORP. (H)	22.13	3.63	19.6
SCUR	15.25	6.37	SECURE COMPUTING CORP.	11.88	-0.38	-3.3
SDTI	42.75	5.43	SECURITY DYNAMICS	10.25	-0.50	-4.7
SE	50.25	20.12	STERLING COMMERCE INC.	35.75	3.00	9.2
SSW	32.81	16.43	STERLING SOFTWARE INC.	25.88	0.56	2.2
SDRC	29.00	7.50	STRUCTURAL DYNAMICS RESEARCH	14.56	0.31	2.2
SYBS	17.62	4.50	SYBASE INC.	5.94	-0.03	-0.5
SYMC	32.62	8.68	SYMANTEC CORP.	16.31	2.56	18.6
SNPS	47.12	24.50	SYNOPSIS	44.38	6.00	15.6
SCCT	30.87	8.50	SYSTEMS & COMPUTER TECHNOLOGY	14.50	2.44	20.2
BAANF	55.50	9.50	THE BAAN CO. N.V.	11.25	0.13	1.1
VNTV	39.75	5.00	THE VANTIVE CORP.	7.38	-0.13	-1.7
TSAI	43.50	27.06	TRANS. SYS. ARCH.	36.06	1.00	2.9
VRTS	60.25	23.75	VERITAS SOFTWARE CORP.	49.88	7.25	17.0
WIND	51.62	28.00	WIND RIVER SYSTEMS INC.	44.63	5.38	13.7

Telecommunications Carriers

UP 2.8%

ATI	65.62	37.06	AIRTOUCH COMMUNICATIONS	55.81	3.50	6.7
AT	48.93	34.75	ALTEL CORP.	46.31	1.25	2.8
AIT	54.93	31.81	AMERITECH CORP.	53.31	1.69	3.3
ANDW	30.06	10.37	ANDREW CORP.	16.25	1.06	7.0
T	68.50	46.50	AT&T	63.31	-0.44	-0.7
BCE	46.62	25.62	BCE, INC.	34.06	4.06	13.5
BEL	53.31	39.18	BELL ATLANTIC	53.31	1.81	3.5
BLS	82.75	45.56	BELL SOUTH	79.88	-0.06	-0.1
CSN	38.62	20.87	CINCINNATI BELL INC.	25.00	1.19	5.0
CMCSK	51.62	25.87	COMCAST	50.00	0.88	1.8
CQ	42.75	21.62	COMSAT CORP.	39.13	4.44	12.8
COX	61.50	29.75	COX COMMUNICATIONS INC.	54.75	-2.38	-4.2
GSTRF	37.12	8.31	GLOBALSTAR TELECOM. LTD.	15.75	0.75	5.0
GTE	64.37	41.37	GTE CORP.	58.50	0.63	1.1
NXTL	34.12	15.37	NEXTEL COMMUNICATIONS	18.69	-1.38	-6.9
SPOT	66.12	26.50	PANAMAT	37.63	2.75	7.9
QCOM	70.37	37.75	QUALCOMM	55.19	0.63	1.1
SBC	48.62	31.31	SBC COMMUNICATIONS	46.13	2.44	5.6
FON	80.12	50.87	SPRINT CORP.	76.31	-0.81	-1.1
TCOMA	44.56	21.68	TELECOMMUNICATIONS (H)	42.13	-1.38	-3.2
TDS	50.12	30.62	TELEPHONE AND DATA SYSTEMS	39.75	1.75	4.6
USW	59.56	38.75	US WEST	57.06	0.81	1.4
VIA	69.37	29.12	VIACOM	60.00	-2.50	-4.0
WCII	48.12	10.25	WINSTAR COMMUNICATIONS INC.	27.00	1.00	3.8
WCOM	57.87	28.50	WORLDCOM INC.	55.13	1.69	3.2

Services

UP 4.5%

ACXM	28.25	15.37	ACXIOM CORP.	25.63	-0.06	-0.2
AFA	39.75	21.50	AFFILIATED COMPUTER SERVS	37.00	2.81	8.2
AMSY	34.50	18.75	AMERICAN MGT. SYSTEMS	30.81	3.38	12.3
AUD	80.43	50.00	AUTOMATIC DATA PROCESSING	78.19	-0.75	-1.0
BSYS	45.62	29.50	BISYS GROUP, INC.	44.38	1.25	2.9
CATP	58.37	13.37	CAMBRIDGE TECHNOLOGY PTRNS	21.50	3.00	16.2
CEN	64.50	37.62	CERIDIAN	57.06	3.25	6.0
CBR	40.87	13.31	CIBER INC.	20.19	0.00	0.0
CDO	23.25	12.43	COMDISCO	15.25	1.00	7.0
CHRS	53.50	17.25	COMPUTER HORIZONS CORP.	23.13	-1.00	-4.1
CSC	74.87	34.50	COMPUTER SCIENCES	51.69	-5.44	-9.5
DST	70.56	34.00	DST SYSTEMS INC.	50.88	3.19	6.7
EDS	50.87	30.00	ELECTRONIC DATA SYSTEMS	39.69	0.94	2.4
FDC	36.06	19.68	FIRST DATA GROUP	26.50	1.44	5.7
FISV	49.37	27.62	FISERV	45.75	1.88	4.3
IT	41.75	17.31	GARTNER GROUP	20.13	1.00	5.2
HBOC	38.37	19.31	HBO & CO.	26.50	2.63	11.0
KEA	60.93	24.75	KEANE	33.56	1.25	3.9
NDC	46.00	26.18	NATIONAL DATA	34.81	1.19	3.5
PAYX	52.00	24.68	PAYCHEX, INC.	49.88	3.50	7.5
REGI	31.75	8.31	RENAISSANCE WORLDWIDE (L)	9.44	-1.81	-16.1
REY	24.00	12.62	REYNOLDS & REYNOLDS	17.75	0.13	0.7
SFE	45.37	17.12	SAFEGARD SCIENTIFICS	26.38	1.19	4.7
SAPE	62.00	24.25	SAPIENT CORP.	44.75	5.38	13.7
SMS	86.50	40.06	SHARED MEDICAL SYSTEMS	49.44	7.31	17.4
SDS	40.00	21.68	SUNGARD DATA SYSTEMS	32.75	2.69	8.9
SYNT	32.62	8.68	SYNTEL INC.	16.31	2.56	18.6
TECD	53.12	33.75	TECH DATA	40.31	-4.69	-10.4
TSS	23.93	12.18	TOTAL SYSTEM SERVICES, INC	19.63	1.13	6.1
TSAI	43.50	27.06	TRANSACTION SYS. ARCHITECTS	36.06	1.00	2.9

Network

UP 4.8%

COMS	46.50	22.93	3COM CORP.	35.94	2.69	8.1
ADCT	43.62	15.75	ADC TELECOMMUNICATIONS INC.	23.38	2.66	12.8
ANTC	25.00	10.37	ANTEC	16.50	2.50	17.9
ASND	55.06	22.00	ASCEND COMMUNICATIONS INC.	47.88	2.25	4.9
BNYN	13.37	2.12	BANYAN SYSTEMS INC.	3.38	0.13	3.8
CS	30.37	6.62	CABLETRON SYSTEMS	11.25	1.25	12.5
CNEBF	21.50	6.50	CALL-NET ENTERPRISES	6.56	-1.06	-13.9
CSCO	70.25	31.87	CISCO SYSTEMS INC	62.41	3.16	5.3
ECILF	38.68	19.75	ECI TELECOM	32.75	4.25	14.9
FORE	28.00	9.25	FORE SYSTEMS INC.	15.81	0.13	0.8
HRS	55.31	27.56	HARRIS CORP	35.00	1.06	3.1
GMH	57.87	30.37	HUGHES ELECTRONICS/GM	38.75	0.81	2.1
ERICY	34.00	15.00	LM ERICSSON	22.63	0.44	2.0
LU	108.50	36.18	LUCENT TECHNOLOGIES	80.44	1.50	1.9
MADGF	7.75	1.75	MADGE NETWORKS	3.94	0.34	9.6
NCDI	13.75	4.37	NETWORK COMPUTING DEV	6.50	0.38	6.1
NWK	20.62	8.00	NETWORK EQUIPMENT TECH.	10.94	0.06	0.6

EXCH 52-WEEK RANGE OCT. 30 WK NET WK PCT 2 PM CHANGE CHANGE

NN	58.87	15.43	NEWBRIDGE NETWORKS	20.44	0.63	3.2
NOKA	92.75	31.62	NOKIA CORP.	92.75	3.50	3.9
NT	69.25	26.81	NORTHERN TELECOM. LTD.	42.75	8.69	25.5
PAIR	30.00	6.00	PAIRGAIN TECHNOLOGIES INC.	8.19	-0.66	-7.4
PCTL	11.93	4.75	PICTURETEL	7.44	0.03	0.4
SFA	27.93	11.75	SCIENTIFIC ATLANTA	14.69	0.06	0.4
SHVA	14.37	2.75	SHIVA	5.66	0.03	0.6
TLAB	93.12	31.37	TELLABS INC.	55.56	1.75	3.3
USW	59.56	38.75	US WEST	57.06	0.81	1.4
VRKL	11.18	2.87	VERILINK	4.50	0.50	12.5
WSTL	21.75	2.75	WESTELL TECHNOLOGY INC.	3.75	-0.31	-7.7
XYLN	31.31	9.62	XYLAN	16.34	1.59	10.8

Semiconductors, Chips & Equipment

UP 6.2%

ADPT	52.50	7.87	ADAPTEC	16.31	-0.13	-0.8
AMD	31.00	9.31	ADVANCED MICRO DEVICES	22.13	4.56	26.0
ALTR	52.25	28.25	ALTERA	41.06	0.19	-0.5
ADI	39.62	12.00	ANALOG DEVICES	20.06	1.25	6.6
AMAT	40.12	21.56	APPLIED MATERIALS	34.75	0.81	2.4
ASMLF	49.06	12.93	ASM LITHOGRAPHY HOLDING	25.44	1.56	6.5
HRS	55.31	27.56	HARRIS CORP.	35.00	1.06	3.1
INTC	95.62	65.65	INTEL CORP.	90.06	1.38	1.6
KLAC	55.50	20.75	KLA INSTRUMENTS	36.69	2.69	7.9
LLTC	81.37	39.12	LINEAR TECHNOLOGY	59.25	-1.13	-1.9
LSI	29.37	10.50	LSI LOGIC	15.44	2.06	15.4
MXIM	42.00	22.31	MAXIM INTEGRATED PRODUCTS	35.38	1.75	5.2
MU	40.12	20.06	MICRON TECHNOLOGY (H)	38.13	2.25	6.3
MOT	67.68	38.37	MOTOROLA	52.00	3.56	7.4
NSM	37.43	7.43	NATIONAL SEMICONDUCTOR	13.06	2.38	22.2
STM	91.75	35.87	SGS-THOMSON MICROELECTRONICS	60.88	7.50	14.1
SLR	59.12	28.87	SOLECTRON CORP.	57.63	-0.75	-1.3
TER	48.43	15.00	TERADYNE	33.44	2.19	7.0
TXN	67.00	39.62	TEXAS INSTRUMENTS	63.44	2.56	4.2
UNPH	65.62	30.12	UNIPHASE	49.19	-4.56	-8.5
VTSS	37.18	15.81	VITESSE SEMICONDUCTOR CORP	33.13	2.69	8.8
XLNX	48.00	28.50	XILINX	44.75	1.63	3.8

How to contact Computerworld

TELEPHONE/FAX

Main phone number(508) 879-0700
All editors unless otherwise noted below
Main fax number(508) 875-8931
24-hour news tip line.....(508) 820-8555

E-MAIL

Our Web address is www.computerworld.com.
All staff members can be reached via E-mail
on the Internet using the form:
firstname_lastname@cw.com.

All IDG News Service correspondents can be
reached using the form:
firstname_lastname@idg.com.

LETTERS TO THE EDITOR

Letters to the editor are welcome and should
be sent to:
letters@cw.com.

Include your address and telephone number.

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path,
Framingham, Mass. 01701

SUBSCRIPTIONS/BACK ISSUES

Phone(800) 552-4431
E-mailcirculation@cw.com
Back Issues.....(508) 820-8167

REPRINTS/PERMISSIONS

Phone.....Ray Trynovich (717) 560-2001, ext. 24
E-mail.....sales@rmsreprints.com

CONTACTING CW EDITORS

We invite readers to call or write with their com-
ments and ideas. It is best to submit ideas to one
of the department editors and the appropriate beat
reporter.

Editor in Chief Paul Gillin (508) 620-7724
Executive Editor Maryfran Johnson (508) 820-8179

DEPARTMENT EDITORS/NEWS

News Editor Patricia Keefe (508) 820-8183
Sections Editor Kevin Fogarty (508) 820-8246
Assistant News Editor Michael Goldberg (508) 620-7789
Assistant News Editor Mitch Betts (202) 347-6718
Assistant Sections Editor Anne McCrory (508) 820-8205
Online Editor Johanna Ambrosio (508) 820-8553
Online News Editor Judith H. Bernstein (516) 266-2863
Industry Editor Joe Maglitta (508) 820-8223
West Coast Bureau Chief Galen Gruman (650) 524-7110

NATIONAL CORRESPONDENT

IT services, systems Julia King (610) 532-7599
integration, outsourcing

SENIOR EDITORS/NEWS

Labor issues, IS careers Barb Cole-Gomolski (760) 728-8858
Network/systems management Cynthia Bournellis (650) 524-7112
Security, network Sharon Gaudin (508) 820-8122
operating systems
IS management, year 2000, Thomas Hoffman (914) 988-9630
financial services
E-commerce, Internet issues Sharon Machlis (508) 820-8231
Microsoft, investigative reports Kim S. Nash (773) 871-3035
Business processes Robert L. Scheier (508) 820-8226
Java, intranets, extranets Carol Sliwa (508) 628-4731
Client/server software, Craig Stedman (508) 820-8120
Unix applications

Midrange hardware, Jaikumar Vijayan (508) 820-8220
Unix, mainframes
Internetworking Bob Wallace (508) 820-8214

SENIOR WRITERS/NEWS

Databases, data warehousing Stewart Deck (508) 820-8155
E-mail, groupware, Roberta Fusaro (508) 620-7776
document management
PCs, servers, network April Jacobs (508) 820-8121
computers, Windows
Computerworld online Patrick Thibodeau (508) 820-8143

STAFF WRITERS/NEWS

New products, Nancy Dillon (650) 524-7114
multimedia, storage
Computerworld online Tom Diederich (650) 524-7117
Telecommunications, Matt Hamblen (508) 820-8567
mobile computing
Application development, David Orenstein (650) 524-7116
desktop applications

OPINIONS

Staff Columnist Frank Hayes (503) 252-0100
Columns Editor Steve Ulfelder (508) 620-7745

DEPARTMENT EDITORS/FEATURES

Managing Allan E. Alter (508) 620-7714
Technology reviews/ James Connolly (508) 820-8144
Review Center

SENIOR EDITORS/FEATURES

Editor at large Gary H. Anthes (202) 347-0134
Features writer Kevin Burden (508) 620-7717
Review Center Cathleen Gagne (508) 620-7729
QuickStudy Stefanie McCann (508) 820-8274
Management Kathleen Melymuka (508) 628-4931
Managing Rick Saia (508) 820-8118
In Depth Steve Ulfelder (508) 620-7745
IT Careers David B. Weldon (508) 820-8166

ASSISTANT EDITOR/FEATURES

IT Careers Mari Keefe (508) 628-4906

RESEARCH

Laura Hunt, Joseph Rigoli, research analysts; Keith Shaw, graphics coordinator.

COPY DESK

Ellen Fanning, managing editor/production (508) 820-8174; Jamie Eckle, assistant managing editor/production; David Ramel, assistant managing editor/special projects; Pat Hyde, senior copy editor; Tom Gaudet, Adam Perez, Bob Rawson, copy editors; Jeremy Selwyn, online production coordinator.

GRAPHIC DESIGN

Tom Monahan, design director (508) 820-8218; Janell Genovese, associate art director/features; Mitchell J. Hayes, associate art director/news; David Waugh, associate art director/online; Nancy Kowal, senior graphic designer; Alice Goldberg-FitzHugh, April O'Connor, graphic designers; Rich Tennant, John Klossner, cartoonists.

ADMINISTRATIVE SUPPORT

Linda Gorgone, office manager (ext. 8176); Connie Brown (ext. 8178); Lorraine Witzell (ext. 8139); Beliza Veras-Moriarty (ext. 8172); Chris Flanagan (650) 524-7111, editorial assistants.

COMPUTERWORLD MAGAZINES GROUP

(Includes Premier 100, Best Places to Work in IS, Intranet Series, Global Innovators and Careers.)
Joyce Chutchian-Ferranti, senior project editor; Amy Malloy, project editor; Mary Beth Welch, associate art director.

COMPUTERWORLD ONLINE

Computerworld online is our World Wide Web site. On it, we publish features and daily news that supplement our print coverage. We also have special audio features, such as interviews with industry notables, and the Computerworld Minute, an audio version of the day's top news.

And there are lists of URLs and other online resources; some relate to print stories, and some do not. For questions regarding online news, contact Judy Bernstein, online news editor, at (516) 266-2863 or judy_bernstein@cw.com. For non-news online information, contact Johanna Ambrosio, online editor, (508) 820-8553 or johanna_ambrosio@cw.com.

Companies in this issue

Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com.

3Com Corp.51, 63
A-dec Inc.1, 4
Aberdeen Group Inc.4
ABT Corp.74
Action Technologies Inc.51
Advanced Book Exchange Inc.46
Algoma Steel Inc.1
Amazon.com46
America Online Inc.8
American Airlines34
American Family Insurance Group20
American Foundation for the Blind86
American Greetings Inc.4
American Hospital Supply34
Amoco Corp.57
AMR Corp.39
AMR Research Inc.1, 6, 57
Apple Computer Inc.8, 102
Arrakis Publishing57
Arthur Anderson & Co.90
ASC Ltd.89
ASI/CartoTech Inc.90
Asymetrix Learning Systems Inc.83
AT&T52, 84
Baan Co.1, 4, 57
Bank of America Corp.8, 74
Barnesandnoble.com46
Bay Networks Inc.51
BCS Technology Ltd.105
Bell South Long Distance Inc.74
BellSouth Business Systems Inc.8
Benchmarking Partners Inc.1, 24
Bertelsmann AG46
Bethlehem Steel Corp.39
Binary Tree Software Inc.43
Blue Cross/Blue Shield
of Rhode Island17
Blue Mountain Arts46
Bonneville Power Administration86
Borealis Technology Corp.10
Broadcast.com12
BSG Laboratories106
Bureau of National Affairs Inc.12
Cabletron Systems Inc.51
Cahners In-Stat Group57
Cambridge Technology Partners Inc.83
Carlton Cards Retail Inc.4
CBT Systems77, 83
Center for Project Management74
Centra Software Inc.77

Challenge Dairy Products Inc.52
Chase Manhattan Bank33
Chevron Corp.43
Cigna Corp.6, 16
Cisco Systems Inc.43, 51, 52
Citrix Systems Inc.52
Clarke American Checks Inc.77
Clarus Corp.57
Cable News Network12
Cognizant Technology
Solutions Corp.39
Computer Sciences Corp.12
Concorde Solutions Inc.8
Corel Corp.105
Cox Target Media Inc.51
Creative Networks Inc.20, 28
Credit Suisse First Boston14
Crestar Financial Corp.77
Cromwell Foote Partners LLC39
Cyrk Inc.10
D.H. Brown Associates Inc.105
Data General Corp.12
Data Warehousing Institute17
Dataquest52, 84
Dell Computer Corp.57, 90
Department of Justice34
DigitalThink Inc.77, 83
Dr Pepper/Seven Up Inc.12
DSC Logistics Inc.16
Electronic Data Systems Corp.39
Electronic Messaging Association14
EMC Corp.63
Entergy Services Inc.51
Federal Aviation Administration12
Federal Express Corp.12, 39
Ford Motor Co.6
Forrester Research Inc.8, 24
Frito-Lay34
Fujitsu Business Communication
Systems Inc.77
Galatech Inc.12
Garage.com102
Gartner Group Inc.4, 10, 43, 57
General Motors Corp.33
GetSmart.com43
Giga Information Group51
Graphical Information Inc.1
H. E. Butt Grocery Co.12
Heidelberg USA Inc.10
Heller Financial Inc.74

Hewlett-Packard Co.1, 14, 43, 105
Hitachi Internetworking51
Human Factors International Inc.1
Hurwitz Group Inc.1, 4, 17
Hydro Agri North America Inc.1
I2 Technologies Inc.39
IBM1, 14, 34, 39, 43, 105
Idot.com64
Inacom Corp.76
Infimium Software Inc.26
Inprise Corp.43
Integral Training Systems Inc.39
Intel Corp.1, 51, 105
Interactive Bureau LLC43
Intergraph Corp.64
International Data Corp.8, 43, 63, 105
Internet Mail Consortium28
JDA Software Group Inc.4
Jupiter Communications Inc.14, 43, 46
KeyCorp20
Kinetic Information26
Kraft Foods Inc.16
L. G. Electronics Inc.1
LANovation4
Lawson Software Inc.26
Legato Systems Inc.12
Liberty Mutual Systems1
Liz Claiborne Inc.1, 4
Lockheed Martin Corp.51, 74
Lotus Development
Corp.20, 26, 43, 51, 77
Lucent Technologies Inc.6, 52
Massachusetts Technology
Development Corp.102
Meijer Inc.12
Merck & Co.39
Merrill Lynch & Co.77
Metropolitan Life Insurance Co.26
Microsoft Corp.1, 4, 8, 14, 16,
17, 34, 39, 43, 52, 77, 83, 84
Morgan Stanley & Co.1
Motorola Inc.63
NASD Regulation Inc.39
Nasdaq Stock Market Inc.6, 39
Nash Finch Co.1
National Association of
Securities Dealers6, 12, 39
National Federation of the
Blind in Computer Science86
NationsBanc Services Inc.43

NCR Corp.105
Net Contents Inc.43
NetDynamics Inc.43
NetIQ Corp.52
Netscape Communications
Corp.6, 8, 12, 43, 84
New York Stock Exchange6
Newmarket Network43
NewMonics Inc.14
Nordstrom Inc.14
Nortel Inc.43, 52
Northern Lights Technology LLC46
Novadigm Inc.52
Novell Inc.3, 12, 43, 51, 54
Office Environments
of New England10
One Meaning Inc.1
One Touch Systems Inc.83
OpenText Inc.43
Oracle Corp.1, 26, 39, 43
Pathlore Software Corp.77
Patricia Seybold Group14
PECO Energy39
Pensare Inc.77
People3 Inc.1
PeopleSoft Inc.1, 26, 57
PepsiCola Inc.39
Pervasive Software Inc.57
Plant-Wide Research Group6
Platinum Software Corp.57
PricewaterhouseCoopers1, 39
Probe Research Inc.52
Procter & Gamble Co.1, 6
Productive Methods Inc.89
Prototype Inc.39
PSComm LLC43
Purina Mills Inc.1, 24
Qualcomm Inc.43
RealityFusion Inc.102
Reebok International Ltd.4
Reynolds Metals Co.16
Richter Systems Inc.4
Roots Canada Ltd.4
Rosenbluth International39
SalesLogix Corp.10
Santa Cruz Operation Inc.8, 105
SAP AG1, 6, 12, 26, 34, 57
SAP America Inc.57, 77, 83
Structural Dynamics Research Corp.6
Seagram Co.74

Securities and Exchange
Commission12
Security Pacific National Bank106
Sequent Computer
Systems Inc.1, 8, 105
Shelley Taylor & Associates46
Shiva Corp.51
Siemens AG52
Society for Information
Management16
Software Inc.12
Solomon Software Inc.57
Southern California Gas Co.43
Stanford University4
Starbucks Coffee Co.39, 106
Statue of Liberty-Ellis Island
Foundation Inc.12
Sun Microsystems Inc.1, 8, 14,
43, 84, 105
SunAmerica Inc.57
Tandy Corp.39
Technical Scouts90
TeleChoice Inc.51
Tetron Inc.17
The Brookings Institution8
The Chase Manhattan Bank Corp.74
The Education News &
Entertainment Network77
The Greenbrier Cos.16
The National Institute of
Standards and Technology14
The Santa Cruz Operation Inc.1, 105
The Wendt Group Inc.16
Time Warner Inc.1
Tioga Systems Inc.4
Toys R Us Inc.39
U.S. Bureau of Labor Statistics1
U.S. Department of Justice8, 84
U.S. Department of Labor1
Unisys Corp.1, 16
University of Baltimore8
University of Missouri86
US West Communication Corp.39
Visa International Inc.1
Visteon Automotive Systems6
Vlami Software Solutions Inc.1
Webley Systems Inc.43
Workgroup Strategic Services Inc.39
World Savings & Loan4
Zona Research Inc.14

U.S. challenges temp status

CONTINUED FROM PAGE 1

close attention to this case," said Esther Roditti, a New York-based attorney. She pointed to what she said were similarities between this suit and the 1993 case against Microsoft Corp., in which former contractors successfully sued the software giant for benefits.

The use of temporary workers in information technology has been on the rise in part because of the IT labor shortage and the desire to control head count. According to the U.S. Bureau of Labor Statistics, the number of computer systems analysts and engineers working as temps or contract workers jumped from 76,000 in 1995 to 107,000 last year, an increase of almost 41%.

CONTRACTORS NEEDED

At Liberty Mutual Systems, the IT arm of Liberty Mutual Insurance Co. in Portsmouth, N.H., the number of IT contract workers has swollen to about 450 because of year 2000 and other projects. "We expect that to wind down [as the projects are finished]," said Richard Ball, employment manager at Liberty. He said companies are more likely to use contractors today "because it's so hard to find full-time people now."

The problems can come when those contractors stay on the job for extended periods of time, attorneys said. There are no hard-and-fast rules, but there are some guidelines — such as length of service and supervision of the worker — that the courts have used to decide whether someone is a contractor or an employee. If a long-term temp is trained by the company and is supervised by an employee of the company, the courts tend to consider that person to be a common-law employee, according to attorneys.

One staffing manager at a big pharmaceutical company pointed out that most IT projects last longer than six months. He said a lot of contract employees like the flexibility of their jobs and don't necessarily want to be em-

If a long-term temp is trained by the company and is supervised by an employee of the company, the courts tend to consider that person to be a common-law employee.

ployees [CW, Aug. 31].

In the case against New York-based Time Warner, the company is accused of classifying

employees as temps even though they worked for Time Warner beyond four to six months, which Time Warner's own guidelines suggest should make them full-time employees. The workers involved include about 1,000 journalists, photographers and graphic designers who worked between 1990 and the present on the company's publications.

Observers said this case should be a signal for companies to at least review their policies in this area.

Linda Pittenger, CEO of Somerset, N.J.-based People3 Inc., a consultancy that specializes in

Big SAP project on ice

CONTINUED FROM PAGE 1

on the project, is launching a crash program to do a year 2000 fix on the mainframe applications that SAP AG's SAP Retail software was supposed to replace.

Bruce Cross, who became Nash Finch's new CIO just six weeks ago, said the company plans to revive the SAP Retail project in early 2000. But it is "impossible to say" when the software could go into use, he said. Cross added that Nash Finch may start over with a newer R/3 release.

Nash Finch was working jointly on the project with consultants from both SAP and Ernst & Young LLP. Cross wouldn't say what bogged down the development work, and Nash Finch corporate spokesman Norman Soland blamed it simply on "testing and programming delays."

MARKETWIDE ISSUE

The problems at Nash Finch are indicative of the difficulties retailers can face when they try to implement R/3 and other enterprise resource planning (ERP) applications that were developed with manufacturers in mind, analysts said.

When work on the project began, the functionality needed by a food distributor and retailer "didn't really exist" in SAP Retail, Soland said. "It was something that was being created [as part of the project]."

Nash Finch planned to start rolling out the retail software in September, but Cross said the

schedule slipped first to next June and then into 2000. Even managing to get some sites up and running next year "wouldn't have solved our year 2000 problem," he added. "It was all or nothing."

NASH FINCH CO.

Headquarters:
Minneapolis

1997 revenue: \$4.4B

1997 net loss: \$1.2M

Employees: 12,200 as of January

Businesses:

- 20-plus wholesale food distribution centers
- 100 retail food stores in 13 states
- Produce-marketing subsidiary in California

SAP Retail was released in the U.S. 18 months ago. But only two U.S. companies — Reebok International Ltd. and MJDesigns Inc., a Coppell, Texas, chain of arts and crafts stores — have the software in production at this point. And both turned it on only in the past two months.

Reebok did ask SAP to make changes in the software to fit its needs, "but everything we needed for going live got done," said

TEMP WORKERS IN COURT

Generally, the courts have upheld a company's right to exclude certain employees from benefits plans

Case	Outcome
Microsoft sued by former contractors	Workers were allowed in 401(k) and stock purchase plans but didn't get stock options
Carriers sue Kansas City Star	Court rules that newspaper carriers are ineligible for benefits
A leased employee sues Du Pont	The employee is denied benefits

human resources issues surrounding IT, advises clients against using long-term temps. "My theory is that if you are going to hire out work, hire temps for a specific skill and have them transfer that skill to your employees," she said.

Keeping long-term contrac-

tors around without a formal outsourcing pact is unwise, Pittenger said. After a particular time period, such as six months, independent contractors should either convert to full-time employee status or be classified as outsourcers, she said. □

Peter Burrows, chief technology officer at the Stoughton, Mass., footwear maker. "And compared with other things we've done, we didn't really see [this project] as that challenging."

The grocery business is especially complex, and Reebok and MJDesigns are both using a more advanced version of R/3 than Nash Finch was working with.

But Andy Laudato, director of systems development at Jo-Ann Stores Inc. in Hudson, Ohio, said SAP Retail still can't fully handle important retail tasks such as auditing store sales and changing the prices of entire product categories in one fell swoop.

"Where retail and manufacturing functionality overlap, [SAP Retail] is very strong," Laudato said. "But in areas that are specific to retail, it just doesn't have depth."

Jo-Ann Stores intends to replace most of its mainframe-based retail systems with SAP Retail next June as part of a \$30 million R/3 rollout. However, the chain of fabric and craft stores may have to hook in other applications to fill SAP's gaps, Laudato said. It also is continuing with a year 2000 fix on the mainframe side in case the SAP Retail project runs into snags.

UPHILL BATTLE

Winning the trust of retailers "has been very, very slow for SAP," said David Dobrin, an analyst at Benchmarking Partners Inc. in Cambridge, Mass. "It's just a different set of problems than R/3 is used to dealing with." Rivals such as PeopleSoft Inc. and Baan Co. was trying to

avoid the kind of headaches SAP is having by teaming up with retail software vendors, he added.

SAP America Inc. executives responsible for the Newtown Square, Pa.-based company's retail program weren't available for comment by press time.

Nash Finch is using SAP's finance applications and still plans to roll those out to more business units, Cross said. But SAP Retail is the centerpiece of the project, which was described in Nash Finch's 1997 10-K financial disclosure form as "a major strategic investment for the company's future."

In addition to relieving the \$4.4 billion company of the need to invest in a year 2000 fix, SAP Retail was expected to deliver business and competitive benefits such as improved efficiency and data analysis.

"We obviously had some hard-dollar benefits in mind," Cross said. "But the bottom line is that we have to make sure we are year 2000-compliant."

More than 100 Nash Finch employees were working on the SAP project. Only a small number will be left to evaluate SAP's upcoming R/3 4.5 release and to continue the finance rollout, Cross said. Most of the others will be shifted to work on the year 2000 program, which is expected to require 125 internal workers and contractors.

Cross said Nash Finch is still assessing how much the year 2000 fix will cost. Coding and testing are scheduled to be finished next April and October, respectively. Company executives are "very confident we're going to make it without a problem," Cross said. □

MORE ONLINE

For more information about temporary workers and related legal and employment issues, visit Computerworld.com online.

www.computerworld.com/more

Unix regroups

CONTINUED FROM PAGE 1

last week, several Unix vendors took a fresh stab at securing the high-end server space in which NT has been trying to mount a challenge.

In an unusual double-header for the industry, Sun Microsystems Inc. and an IBM-led consortium of vendors last week made separate moves that promise to expand the gap between NT and Unix on both Intel Corp. and RISC platforms.

Systems Inc. to develop a merged Unix for Intel's forthcoming 64-bit Merced chip, due late next year. IBM and Intel also said they would sink "tens of millions" of dollars during the next few years into a campaign to attract more independent application vendors to develop software for the merged Unix, which will be called Monterey (see related story at right).

In a *Computerworld* poll of

nouncements (see chart).

Such moves, combined with the ever-receding launch date of NT 5.0 — renamed Windows 2000 last week (see story, page 8) — and Microsoft Corp.'s own attempts to tone down expectations for that product, are giving Unix vendors a chance to regroup against Microsoft at the high end, said Thomas Kraemer, an analyst at Morgan Stanley & Co. in New York.

"There is a little bit of a Unix resurgence going on because NT is still not mature enough" to handle large workloads, Kraemer said.

In *Computerworld*'s poll, 72% of the respondents said they would pick Unix to run business-critical applications based on the relative strengths of the two operating environments.

"Unix is still a much more robust platform" for important applications in terms of scalability and reliability, said Ralph Fusco, manager of technical services at Liz Claiborne Inc., a mixed Unix/NT shop in North Bergen, N.J. "NT will be there, but it is not quite yet."

Visa International Inc. relies on a battery of Unix servers to give it the continuous availability it needs for processing its U.S. credit-card authorizations. Visa, which is migrating those operations off a range of small mainframes, chose Hewlett-Packard Co. Unix platforms because they are more reliable than NT, said Jim Long, a director at Visa in San Mateo, Calif.

At the same time, though, Windows NT is playing an expanding role at Visa, running a

Vendors pitch 64-bit Unix for Merced

Last week's alliance of IBM, Santa Cruz Operation (SCO) and Sequent to develop a merged Unix for Intel's forthcoming 64-bit Merced chip could pose a formidable threat to Sun's growing influence in the Unix market.

Under the arrangement, IBM will integrate technologies from SCO's UnixWare and Sequent Computer's PTX operating systems into a common Unix for Merced. IBM will also transfer AIX technology to SCO for use in UnixWare on IA-32 platforms and will port major middleware and applications to the merged Unix.

The deal assumes importance because it gives IBM immediate access to SCO's expertise in optimizing Unix for Intel, said Tony Iams, an analyst at D. H. Brown Associates Inc. in Port Chester, N.Y.

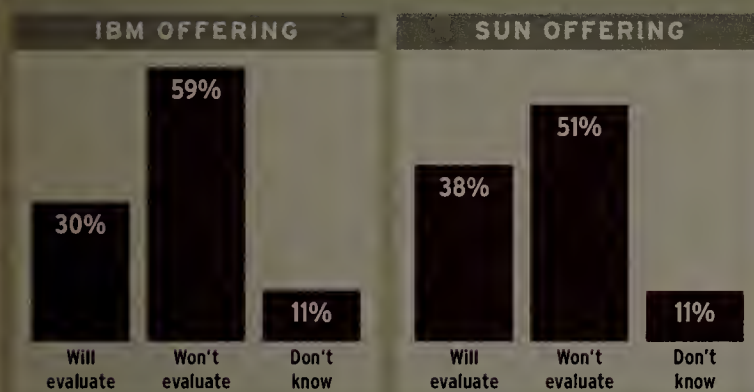
Accounting for more than 40% of Unix server licenses sold last year, SCO is the largest vendor of Unix on Intel, according to figures from IDC. Unlike other Unix vendors, though, most of SCO's presence has been at the low end.

"Their greatest asset is their access to [independent software vendors] and resellers who can help IBM drive AIX into the high-volume" Unix-on-Intel market, Iams said.

IBM's initiative with SCO and Sequent comes after other Unix players' Merced moves. Hewlett-Packard Co.'s commitment began when it teamed with Intel to develop the IA-64 architecture. Sun has teamed with NCR Corp. to develop a Solaris version for Merced.

Scheduled to ship some time late next year, the Merced chip's main attraction lies in its promise to run both Unix and Windows NT applications equally well, and at a much lower cost than current-generation RISC servers. — Jaikumar Vijayan

Percentage of users who will evaluate new Unix offerings from IBM and Sun:



Base: 105 IT managers at companies with 200 or more employees and with Windows NT Server and any version of Unix in use

Sun rolled out a new 64-bit version of its Solaris operating system for RISC servers that features new hooks for Windows NT, Java and Web commerce [CW, Oct. 26].

And IBM said it's teaming with The Santa Cruz Operation Inc. and Sequent Computer

105 information technology professionals at mixed Unix and Windows NT shops, nearly one-third of the respondents said they would evaluate the new offerings from IBM and Sun, but 86% said they wouldn't change their plans for Windows NT on the server because of the an-

Corel to give out free Linux WordPerfect

By David Orenstein

OTTAWA-BASED Corel Corp. is in the vanguard of companies trying to mine commercial gold from the freeware Linux operating system. But to expand the market and be true to Linux's spirit, it plans to give away a nearly full version of its WordPerfect word processor for free.

WordPerfect for Linux 8 will be available as a free download by midmonth, said spokeswoman Susan Gauthier. The download version will lack clip

art, free technical support and a manual. The full version will cost \$99 and be in stores in December; the upgrade from Version 7 for Linux will cost \$69. Corel's studies show that 39% of Linux software users paid for the software, she said.

MORE APPS NEEDED

WordPerfect for Linux brings Linux closer to becoming a viable alternative to Windows clients, but more applications are needed, said Andrew Allison, editor of the "Inside the New Computer Industry" newsletter in Carmel, Calif. "Much as I would like to escape from Windows 95, I have to escape to a safe and sane platform. I have to get my work done," he said. A cohesive packaging of a Lin-

ux-based PC should also include a database, spreadsheet and presentation software, he said.

Linux's commercial viability is on the cusp of being accepted by business users, said Bill Brier, who runs the Unix consultancy BCS Technology Ltd. in Morris, Ill. It's "a watershed moment," he said. Brier said installing WordPerfect for a client that's implementing Linux will be an important test of the system's capability.

He said he has used WordPerfect for The Santa Cruz Operation Inc.'s version of Unix and found that it performs much faster than Windows or DOS versions. Unix operating systems, including Linux, manage memory more efficiently when multitasking, he said. □

core worldwide payment system, for instance.

"NT right now is meant more for smaller and midrange applications . . . but there is no doubt that it is getting more mission-critical" based on Visa's experience with NT and NT 5.0's expected features, Long said.

And some firms, such as the \$12 billion L. G. Electronics Inc. (LGE) in Seoul, South Korea, are turning to Unix from mainframes because more packaged software and tools are available to run huge applications. LGE is implementing a massive Oracle Corp. supply-chain management application on Sun Microsystems Inc. servers.

"We chose [Unix] because of the cost/performance" and because "platform performance is expected to be equivalent to a mainframe supporting more than 4,000 users," said Gye Hyun Park, director of IT at LGE.

Overall, Windows NT server growth at 138.9% was much faster than the growth of Unix servers at 26.1% between 1996 and 1997, according to International Data Corp. (IDC) in Framingham, Mass. IDC is a sister company to *Computerworld*. But on average, Unix systems supported more end users and a wider range of applications than NT, IDC said. □

Enterprise JavaBeans gains a tool

By Carol Sliwa

THE HOT and increasingly crowded application server space will get another Enterprise JavaBeans-compliant entry today when Novera Software Inc. launches the fourth version of JBusiness.

User companies say they want products to support the Enterprise JavaBeans specification — which will reduce the amount of code they need to write for distributed applications.

But many have been hesitant to rush to use the few Enterprise JavaBeans 1.0-compliant products on the market as the specification matures.

Novera's JBusiness 4 is due by December for \$3,495 per developer. The development tool kit sells for \$3,495 per programmer.

The application/management server costs \$350 per concurrent user in an intranet setting, and \$9,995 per processor for Internet use. □



The Back Page

alt.cw

Dispatches & images from the fringes of the electronic frontier

FEEL THE GAMING THUNDER

Feel the G forces of the jet fighter and every explosion with the Intensor, a PC game chair from BSG Laboratories (www.intensor.com). The speakers envelop you in a "soundfield" that puts you in the middle of the

action. And the chair pumps gut-thumping vibrations through your

body for a more intense gaming experience. The

portable chair costs

between \$300 and

\$600. It can be

hooked up to PCs,

video game con-

soles and VCRs.

Digital archives



50 YEARS AGO

(November 1948)

■ *Scientific American* magazine reports on "cybernetics," a new field of science that tries to find "the common elements in the functioning of automatic machines and the human nervous system."

20 YEARS AGO

(November 1978)

■ Stanley Mark Rifkin, a computer consultant, is arrested and charged with stealing \$10.2 million from Security Pacific National Bank in a case of wire-transfer fraud.

Inside Lines

No sense of humor

Companies that wink at employee-sponsored spoofs on their intranets may learn a thing or two from the Microsoft antitrust trial. Microsoft attorneys had Jim Barksdale, CEO of Netscape Communications Corp., squirming on the witness stand last week when they displayed a screen shot of a Netscape internal Web page that ridiculed the company's products and marketing. "Next Monday, Netscape will release two or three more bug-ridden betas and maybe an actual release version of something which was obsolete months ago," read the page. Barksdale's response: "They grouse about the cafeteria food and everything."

A non-denial denial and a non-no no

Cisco Systems Inc. will neither confirm nor deny word on the street that the San Jose, Calif., vendor is porting its Cisco Networking Services/Active Directory (CNS/AD) to Sun Microsystems' Solaris while waiting for Microsoft's delayed Windows NT 5.0, now to be known as Windows 2000. "It's obviously on our radar screen, but as far as doing it before [NT] 5.0, we can't comment," a Cisco spokeswoman said. And what about the rumored Novell NetWare CNS version? "We're always willing to work with partners but have no development agreement with them," she said. We think that means no.

And Dilbert will work for a pointy-haired robot

Once we make it past the year 2000 bug, life should be simpler in IT shops — right? Not according to Bob Treadway, a futurist who spoke at last week's Society for Information Management conference in Seattle. Among Treadway's predictions for the coming decade are the following: In 2001, phone numbers will be assigned at birth, and you'll keep them the rest of your life. In 2004, evolutionary software fixes itself and writes itself. In 2006, technology industry downsizing occurs as intelligent agents take over administrative and other jobs. Unemployment zooms to 15%.

Overheard

Sun Microsystems Chief Operating Officer Ed Zander, on New York City's crackdown on street vendors: "One downside is that Microsoft's just lost a channel for selling software." ... International Data Corp. analyst Bill Peterson, on Microsoft's announcement linking Windows to the year 2000 problem with its new name, Windows 2000: "That's like saying 'the lucky number 13.'" ... Slightly confused professional wrestler Larry Zbyszko, on the millennium bug: "Wait 'til the KY2 problem hits in the year 2000."

Come up and see my back office some time

The long hours put in by enterprise resource planning project teams can make it awfully hard to find dates. But don't give up those romantic dreams yet — ERPcentral (www.erpcentral.com), a Web site devoted to ERP software, launched an "ERP dating forum" last week. Only one (alleged) entry was listed as of late Thursday: a brief message from "Brigitte," who was "looking for SAP consultants in Paris." Ooh-la-la. But by Friday, ERP consultants in Amsterdam, London and Grand Rapids, Mich., had checked in — and they appeared legit: "Anyone out here for a beer?" asks one message, while another is headed "Baan beers in Amsterdam."

Too bad that dating forum wasn't online in time to help Leslie Boorse, a member of the "culture team" at Sapient Corp., an ERP consultancy in Cambridge, Mass. Her yearlong quest for a mate was the subject of a surreal, seven-part series on the front page of The Boston Globe last week. "I'm starting to realize that maybe being in love with somebody is being swept away with abandon," as she is quoted, sounds tailor made for a chat room. News editor Patricia Keefe has her own page-one problems to worry about, but you can help by sending your news tips and tidbits her way. E-mail her at patricia_keeefe@cw.com or call (508) 820-8183.

Java for the masses

As if Starbucks Coffee weren't ubiquitous enough, it now has a Web site (www.starbucks.com) for coffee aficionados. The site offers premium coffees and other gifts for sale, a store locator, a Coffee Taste Matcher that makes recommendations and — most important — a guide to pronouncing the names of some of the more exotic blends.



THE FIFTH WAVE by Rich Tennant



"Face it, Vinnie — you're gonna have a hard time getting people to subscribe online with a credit card to a newsletter called 'Felons Interactive.'"

Most firewalls are like bullet-proof vests. That's the problem.



N
e
t
T
o
o
l
s



PGP Total Network Security



McAfee Total Virus Defense




Sniffer Total Network Visibility





Magic Total Service Desk

 **Enter the Gauntlet Active Firewall.** EVER WONDER IF YOUR FIREWALL REALLY WORKS? AND HOW WOULD YOU KNOW BEFORE IT'S TOO LATE?

ALL OF THOSE NAGGING QUESTIONS ARE EASILY ANSWERED WITH NETWORK ASSOCIATES' PATENT PENDING GAUNTLET ACTIVE FIREWALL TECHNOLOGY.  **Intrusion Detection & AntiVirus Built Right In.** CYBERCOP SCANNER, OUR VULNERABILITY ASSESSMENT MODULE, TUNES GAUNTLET BY

SIMULATING AN ACTUAL HACKER ATTACK AND CRACKING PASSWORDS INSIDE YOUR NETWORK. TOGETHER WITH WEBSHIELD (ANTIVIRUS PROTECTION FOR INTERNET GATEWAYS), GAUNTLET ACTIVE FIREWALL PROVIDES THE ONLY COMPLETE, INTEGRATED SECURITY SOLUTION AVAILABLE TODAY.

 **The Product of Choice.** GAUNTLET AND NETWORK ASSOCIATES ARE THE CHOICE OF THE US MILITARY AND THE INTELLIGENCE COMMUNITY, NOT TO MENTION BEING THE WORLD LEADER IN SECURITY SOFTWARE. WE OFFER A COMPLETE FAMILY OF NET TOOLS NETWORK SECURITY AND MANAGEMENT SUITES, MAKING US THE ONLY COMPANY TO CHOOSE WHEN SECURITY REALLY MATTERS.  **Net Tools: Securing & Managing your NT Network.** CALL 800-332-9966, DEPT. 0342 FOR

OUR WHITE PAPER ON ACTIVE FIREWALL INTEGRATED SECURITY SOLUTIONS OR VISIT US AT [WWW.NAI.COM](http://www.nai.com).

NOW THAT'S BULLET-PROOF PROTECTION YOU CAN ALWAYS COUNT ON. HASTA LA VISTA, HACKERS.

 **network**
ASSOCIATES
Who's watching your network

There's the
expensive
choice,

Microsoft® Office 97

- ✓ Microsoft® Word
- ✓ Microsoft® Excel
- ✓ Microsoft® PowerPoint®
- ✓ Microsoft® Outlook

and then there's
the right
choice!

Corel® WordPerfect® Suite 8 with Dragon NaturallySpeaking™

- ✓ Corel® WordPerfect® 8 *with speech-enabled word processing*
- ✓ Corel® Quattro® Pro 8
- ✓ Corel® Presentations™ 8
- ✓ CorelCENTRAL™ 8
- ✓ Concurrent usage *fewer licenses, everybody gets access*
- ✓ Home and laptop usage *we're covered when we're on the road*

COREL®

Suite
WordPerfect® 8

With



Dragon
NaturallySpeaking™

Voice-Powered Office Suite Excellence

For licensing and reseller information, visit
www.corel.com/clp.



Go further™

Comparison contains product information that is correct to the best knowledge of Corel at the date of publication. Per seat pricing based on competitive upgrade version of Corel's CLP Office™ Level A pricing vs. Microsoft Open License Program Level A pricing. Pricing for other levels is as follows: CLP Choice Level B-\$89 vs. Microsoft Open License Program Level B-\$224, CLP Choice Level C-\$89 vs. Microsoft Open License Program Level C-\$216. Microsoft prices were obtained from the Microsoft Web site and are suggested list prices in US\$ as at Aug. 1, 1998.
Copyright © 1998 Corel Corporation. All rights reserved. Corel, WordPerfect, Quattro, Presentations, CorelCENTRAL and the Go further logo are trademarks or registered trademarks of Corel Corporation or Corel Corporation Limited. Dragon NaturallySpeaking and the Dragon logo are trademarks or registered trademarks of Dragon Systems, Inc. Microsoft and PowerPoint are registered trademarks of Microsoft Corporation. All other product, font and company names and logos are trademarks or registered trademarks of their respective companies. KUR-0860-US

MS \$231* per seat (upgrade)
Corel **\$89*** per seat (upgrade)